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BULLETIN No. 101

BIOLOGICAL SERIES No. 30

THE ALPINE FLORA OF THE EAST SLOPE OF
MACKENZIE MOUNTAINS, NORTHWEST
TERRITORIES

BY

A. E. Porsild



OTTAWA
EDMOND CLOUTIER
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1945

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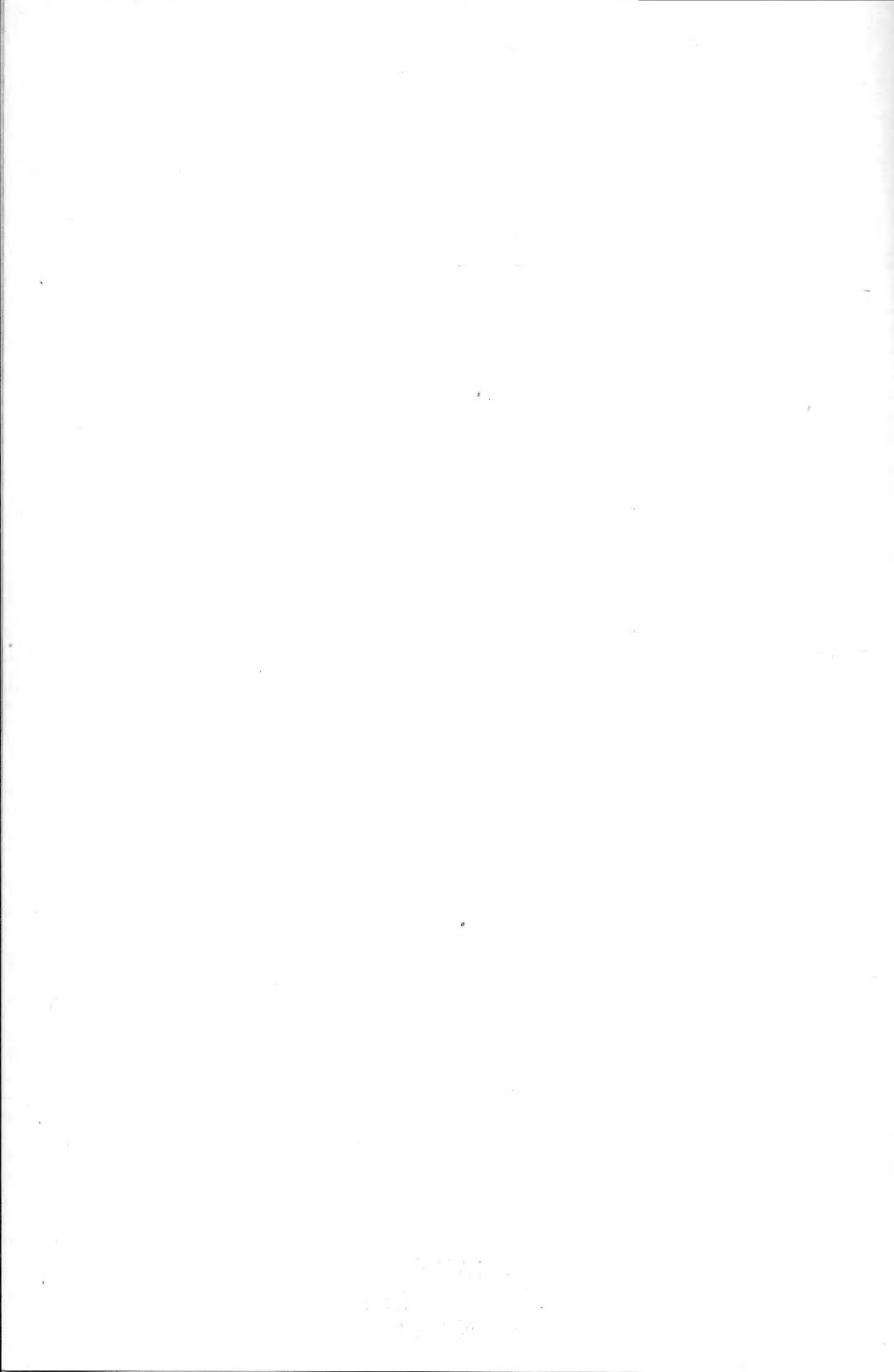
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THE ALPINE FLORA OF THE EAST SLOPE OF MACKENZIE MOUNTAINS, NORTHWEST TERRITORIES

INTRODUCTION

At the conclusion of a field season spent in southeastern Yukon, adjacent to the Canol pipe-line, the writer from September 5 to 10, 1944, made a hurried reconnaissance trip over the eastern part of the recently completed Canol Road, from Macmillan Pass to Mackenzie River, Northwest Territories, and back.

The season was far advanced and, following a few days of sharp frost accompanied by a snowfall, all green vegetation was killed. The snow, however, had disappeared again, except on the highest peaks, and most species were still recognizable even though rarely in condition for the making of satisfactory herbarium specimens. Notes were made on the occurrence and distribution of all plants seen along the road, but as time was short and the observation limited to the immediate vicinity of the road these were, naturally, far from complete.

The writer was very fortunate, therefore, to receive from Prof. V. C. Wynne-Edwards of McGill University a fine collection of plants made in late July, in the vicinity of Bolstead Creek Pump Station, near Mile 111 E. Prof. Wynne-Edwards had spent the summer investigating the freshwater fishes of the lower Mackenzie drainage basin, and when in the course of this work he made a trip up the Canol Road he climbed a mountain range northwest of Bolstead Creek. Earlier in the season he had made a collection of plants on the upper slopes of Nahanni and Lone Mountains west of the Mackenzie near the confluence of North Nahanni River.

The combined collections do not by any means include all species to be found but do contain so many important additions to the known flora of the Northwest Territories, not to mention numerous important range extensions, that the writer considers it is desirable at this time to publish a catalogue of the flowering plants collected by him and by Prof. Wynne-Edwards, to which has been added a number of species noted in the field.

The flora of the Mackenzie Mountains has long remained totally unknown. In 1939, Dr. Hugh M. Raup of Harvard University made very extensive collections in the Brintnell or Glacier Lake region of the upper South Nahanni River. The botanical results of his expedition will be embodied in a comprehensive report by Dr. Raup on the flora of the upper Mackenzie drainage basin.

Extensive botanical collections were made by the writer on the west slope or Yukon side of the Mackenzie Mountains during the summer of 1944. A detailed report is now in preparation as part of a floristic and ecologic study of the flora of southwest Yukon adjacent to the Canol pipe-line.

The plants collected by Prof. Wynne-Edwards on Lone and Nahanni Mountains are enumerated in a separate list, which, though less complete than that of the plants of the east slope of Mackenzie Mountains, adds very materially to our knowledge of a region that, likewise, is botanically unknown.

Finally, at the end of this paper are listed several small collections of lowland species made by Prof. Wynne-Edwards at various points along Mackenzie River, between Mills Lake and Arctic Red River.

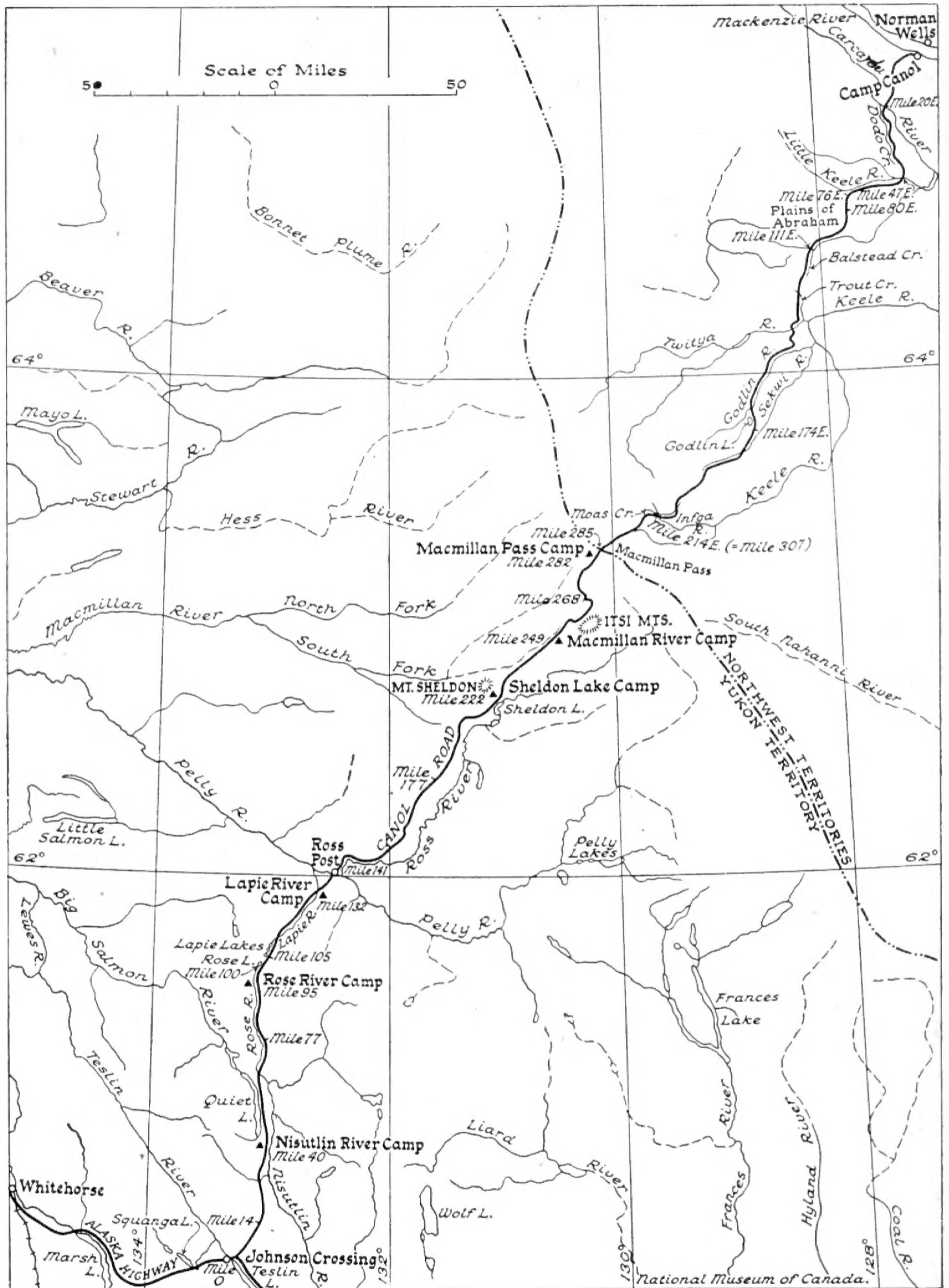


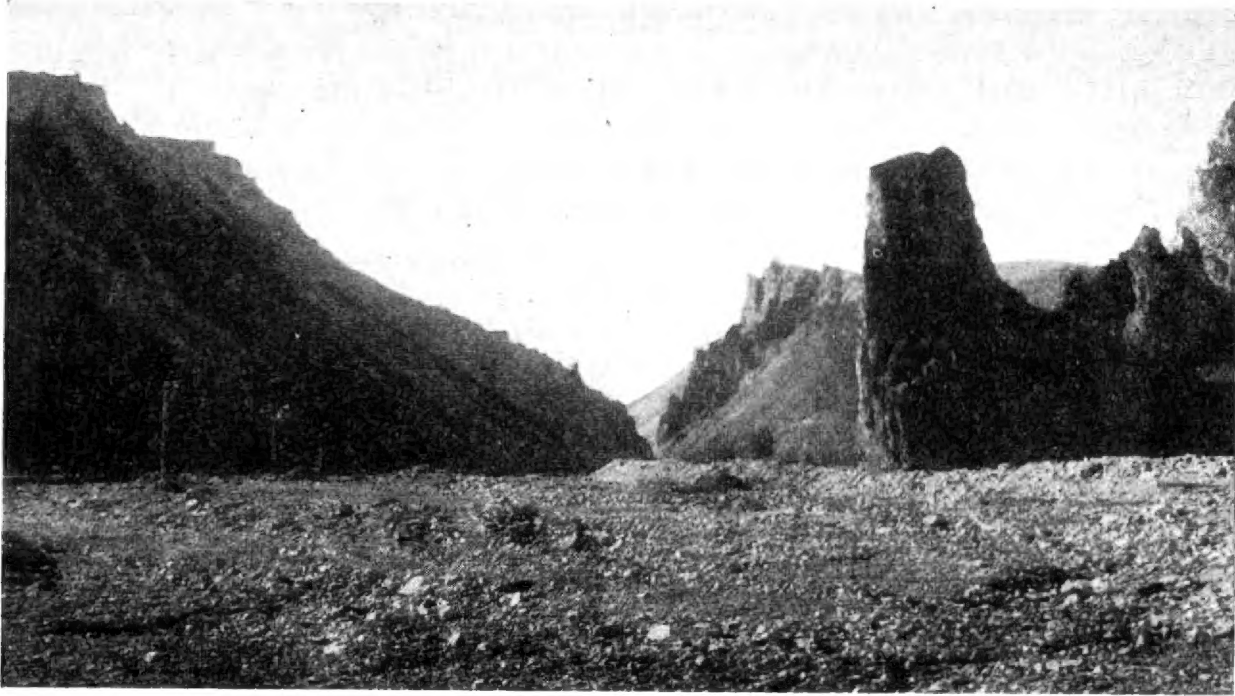
Figure 1. Map of Canol road, Yukon and Northwest Territories, with mileages and camps established by the National Museum of Canada field party, 1944.

THE CANOL ROAD

MACKENZIE VALLEY

The Mackenzie Valley near the Norman oil wells is approximately 30 miles wide. To the east it is bordered by the Norman Range and to the west by the foothills of the Mackenzie Mountains. The road starts on the west bank of Mackenzie River opposite Norman Wells and over a distance of about 20 miles

PLATE I



Dodo Canyon.

PLATE II



Dodo Canyon with towering limestone walls and screens of fallen rock.
Road follows the bed of Dodo Creek.

crosses a gently rolling alluvial plain, perhaps 200 feet above river level. This plain is covered by muskeg forest and swamps in which the dominant trees are black and white spruce, paper birch, and tamarack. At Mile 27 the road crosses Carcajou River and at once enters Dodo Canyon. The banks of the lower

Carcajou and some of its tributaries are covered with a mixed forest of paper birch and white spruce. In several places near the road were seen rather extensive stands of pure birch.

For a distance of about 12 miles the road follows Dodo Creek between the 500- to 1,000-foot high, precipitous, stratified limestone cliffs of Dodo Canyon, which is unquestionably the most scenic part of the entire Canol Road. From the head of the Canyon the road climbs to above timber-line, crossing the 3,200-foot high divide to Little Keele River.

LITTLE KEELE RIVER

Soon after crossing Little Keele River at Mile 50 E the road climbs a muskeg-covered slope. While here for lunch, notes were made of the plants that appeared characteristic of the lower slopes, below timber-line. In the bed of a small creek the following species were noted:

Picea glauca var.
Elymus innovatus
Festuca altaica
Tristeum spicatum
Carex scirpoidea
Tofieldia palustris
Zygadenus elegans
Salix alaxensis
S. myrtilifolia
S. Richardsonii
Thalictrum alpinum
Saxifraga aizoides

Parnassia palustris var. *neogaea*
Dryas integrifolia
D. octopetala
Potentilla fruticosa
Oxytropis hyperborea
Epilobium latifolium
Rhododendron lapponicum
Arctostaphylos rubra
A. Uva-Ursi
Solidago multiradiata
Aster sibiricus
Erigeron hyssopifolius

PLATE III



Muskeg-covered slope west of Little Keele River near Mile 50 E.
 The trees are black spruce.

The muskeg-covered slopes adjacent to the creek showed an unusually varied flora, in which the following species were characteristic:

Equisetum scirpoides
Selaginella selaginoides
Larix laricina
Picea glauca var.
P. mariana
Eriophorum angustifolium

E. opacum
Carex gynocrates
C. membranacea
Juncus castaneus
Salix reticulata
S. glauca

Alnus crispa
Betula glandulosa
Rumex arcticus
Silene acaulis var. *exscapa*
Arenaria Rossii
Papaver Keelei
Parrya nudicaulis
Potentilla fruticosa
Lupinus arcticus
Hedysarum alpinum var. *americanum*

Cassiope tetragona
Ledum groenlandicum
Arctostaphylos rubra
Vaccinium uliginosum
V. Vitis-Idaea
Pedicularis labradorica
P. sudetica
Saussurea angustifolia
Senecio atropurpureus
S. lugens

From the crossing of Little Keele River the road rapidly climbs to above timber-line, crossing several spurs of a mountain range in steep, hairpin turns. On a gravelly ridge overlooking the valley of the Little Keele, at an elevation of about 4,000 feet were found small clumps of the very rare Asiatic *Potentilla elegans*, which has been collected only a few times in North America and never before in Canada; with it grew other high-alpine species, including *Arenaria macrocarpa*, *Carex nesophila*, *Draba Bellii*, and *Androsace Chamaejasme* var. *arctica*.

PLAINS OF ABRAHAM

At Pump Station No. 3, Mile 71 E, the road leaves the Little Keele and through a narrow, tortuous ravine, over a distance of about 10 miles, climbs from 3,000 feet to 5,700 feet to a flat-topped mountain range known as the "Plains of Abraham", the highest point on the entire Canol Road.

PLATE IV



Bald, rock-covered summit of Plains of Abraham, elevation 5,700 feet.
 Broken limestone rubble almost devoid of vegetation. Mile 82 E.

Where the road and pipe-line cross, this alpine plateau is covered by a thick mantle of weathered limestone rubble through which protrude ledges or cliffs of solid rock. Along the road, grading and road cuts show fine examples of contemporary sorting and movement of soils by frost action. Everywhere on sloping ground solifluction and live stone creeps can be observed, and on level ground polygon formation is active. Outcrops of rock everywhere show evidence of rapid weathering by frost action. From the abundance of water in the soil and the seepages noticeable at the bottom of all hills and slopes precipitation appears to be high.

Generally speaking vegetation covers only a small percentage of the surface, and viewed from a distance the plateau appeared almost totally bare. Closer examination, however, revealed considerable plant life. Thus, in 6 hours of botanizing, no less than sixty species of vascular plants were collected or recorded. Four more or less distinct habitats were discernible, each conditioned largely by exposure to the prevailing wind, snow cover, and soil.

On the coarse, unsorted, broken limestone rock of the wind swept ridges and rocky summit were noted:

| | |
|------------------------|--------------------------------|
| <i>Carex misandra</i> | <i>Arenaria arctica</i> |
| <i>Luzula nivalis</i> | <i>Papaver Keelei</i> |
| <i>Salix arctica</i> | <i>Saxifraga oppositifolia</i> |
| <i>S. phlebophylla</i> | <i>Dryas integrifolia</i> |

Even the most sterile limestone talus had some vegetation:

| | |
|--------------------------------------------|----------------------------|
| <i>Carex nardina</i> var. <i>Hepburnii</i> | <i>Melanidion boreale</i> |
| <i>C. rupestris</i> | <i>Potentilla uniflora</i> |

Here and there on gentle slopes, sheltered against the prevailing wind, small "islands" of *Cassiope tetragona* heath occur. In this heath grew the following:

| | |
|---------------------------|------------------------------|
| <i>Thalictrum alpinum</i> | <i>Oxytropis Maydelliana</i> |
| <i>Eutrema Edwardsii</i> | <i>O. terrae-novae</i> |
| <i>Parrya nudicaulis</i> | <i>Pedicularis capitata</i> |
| <i>Potentilla biflora</i> | <i>Senecio atropurpureus</i> |

Finally, on level, sheltered flats, on gentle slopes, and at the foot of slopes where small terraces form due to soil flow were noted:

| | |
|--------------------------------|----------------------------|
| <i>Arctagrostis latifolia</i> | <i>Tofieldia palustris</i> |
| <i>Puccinellia Vahliana</i> | <i>Arenaria humifusa</i> |
| <i>Carex atrofusca</i> | <i>A. Rossii</i> |
| <i>C. membranacea</i> | <i>Thalictrum alpinum</i> |
| <i>Kobresia simpliciuscula</i> | <i>Papaver Keelei</i> |
| <i>Juncus triglumis</i> | <i>Braya humilis</i> |
| <i>J. biglumis</i> | <i>Draba Bellii</i> |
| <i>Lloydia serotina</i> | <i>Saxifraga aizoides</i> |

Dryas integrifolia and *Salix phlebophylla* are important pioneering species in moving polygon fields where they gain a foothold in the polygon fissures and provide anchorage and soil for other species.

The following species were collected or noted on the flat summit of Plains of Abraham:

- Equisetum variegatum*. Occasional in wet places.
- Arctagrostis latifolia*. Common in wet meadows.
- Poa alpina*. Occasional, in gravelly places by a brook.
- Puccinellia Vahliana*. Occasional in wet places.
- Carex atrofusca*. Common in wet places.
- C. membranacea*. Common in wet places.
- C. misandra*. Common.
- C. nardina* var. *Hepburnii*. Common in dry limestone screes.
- C. rupestris*. Rare or occasional in dry places.
- C. scirpoidea*. Common.
- C. ? gynocrates*. Rare, in wet places.
- Kobresia simpliciuscula*. Common in wet places.
- Eriophorum angustifolium*. Very common in wet places.
- Juncus biglumis*. Common in wet places.
- J. ? triglumis*. Common in wet places.
- Luzula nivalis*. Rare, in *Cassiope* heath only.

- Lloydia serotina*. Occasional in wet places.
Tofieldia palustris. Occasional in wet places.
Salix arctica. Common in wet places.
S. phlebophylla. Very common.
Polygonum viviparum. Common.
Stellaria longipes. Common in gravelly places.
Arenaria arctica. Common in dry, gravelly places.
A. humifusa. Rare, in wet places.
A. Rossii. Common in wet, gravelly places.
A. sajanensis. Rare or occasional; by a brook.
Silene acaulis var. *exscapa*. Common in rocky scree.
Thalictrum alpinum. Common in wet places and in *Cassiope* heath.
Anemone parviflora. Rare or occasional; by a brook.
Melandrium apetalum. Occasional in wet gravel.
Papaver Keelei. Common.
Braya ? humilis. Rare, in wet places.
Draba Bellii. Common in wet, gravelly places.
Eutrema Edwardsii. Very scarce in heath and in grassy places.
Melanidion boreale. Occasional in dry limestone screes.
Parrya nudicaulis. Common in wet, gravelly places.
Saxifraga aizoides. Common in wet places.
S. Hirculus. Rare or occasional in wet places by a brook.
S. oppositifolia. Common in gravelly places.
Dryas integrifolia. Common in dry, gravelly places.
D. octopetala. Rare or occasional.
Potentilla biflora. Rare or occasional in *Cassiope* heath.
P. uniflora. Occasional or rare in dry places.
Oxytropis Maydelliana. Occasional in *Cassiope* heath.
O. terrae-novae. Occasional in *Cassiope* heath.
Cassiope tetragona. Common in sheltered places.
Vaccinium uliginosum var. *alpinum*. Rare, in *Cassiope* heath.
Androsace Chamaejasme var. *arctica*. Very common in gravelly places.
Armeria vulgaris ssp. *arctica*. Rare or occasional.
Gentiana propinqua. Rare, by a brook.
Pedicularis arctica. Occasional in *Cassiope* heath.
P. capitata. Rare in *Cassiope* heath.
P. lanata. Occasional in limestone gravel.
P. sudetica. Common in wet places.
Erigeron unalaschkensis. Rare by a brook.
Chrysanthemum integrifolium. Common in dry, gravelly places.
Arnica alpina ssp. *angustifolia*. Rare on dry slope.
Saussurea angustifolia. Rare in *Cassiope* heath.
Senecio atropurpureus. Rare in *Cassiope* heath.
S. resedifolius. Rare by a brook.

BOLSTEAD CREEK

Following a steep descent from the Plains of Abraham, the road crosses a small tributary to Carcajou River, then climbs over a high spur to descend again to a broad gravelly flood plain through which the upper Carcajou winds. The general elevation is about 4,000 feet and timber-line conditions prevail with open, alpine tundra, here and there relieved by a group of stunted white spruce growing in a sheltered place by a creek. Leaving the Carcajou the road enters the narrow, almost canyon-like valley of Bolstead Creek. Near the head of this stream, hemmed in by towering rock walls, is Pump Station No. 4, Mile 111 E, at an elevation of 4,420 feet.

Prof. Wynne-Edwards spent 2 days here in late July and collected plants on the alpine slopes of the rock-wall back of the Pump Station. He also climbed a high alpine ridge 6 miles northwest of the Pump Station. The summit, approximately 7,300 feet above sea-level, is the highest peak in the vicinity. He brought back a fine collection of plants, which has been incorporated into the catalogue.

Time did not permit the writer to make extensive collections here. In the course of a short walk in the vicinity of the Pump Station the following species were noted on a terrace opposite the Pump Station and on gravel outwash plains in the river bed:

| | |
|-----------------------------------------|--------------------------------------------------|
| <i>Equisetum variegatum</i> | <i>Silene acaulis</i> var. <i>erescapa</i> |
| <i>Selaginella selaginoides</i> | <i>Thalictrum alpinum</i> |
| <i>Picea glauca</i> | <i>Parrya nudicaulis</i> |
| <i>Elymus innovatus</i> | <i>Saxifraga aizoides</i> |
| <i>Festuca altaica</i> | <i>S. oppositifolia</i> |
| <i>Trisetum spicatum</i> | <i>Dryas integrifolia</i> |
| <i>Eriophorum angustifolium</i> | <i>Potentilla fruticosa</i> |
| <i>Kobresia simpliciuscula</i> | <i>Oxytropis campestris</i> |
| <i>Carex membranacea</i> | <i>O. hudsonica</i> |
| <i>C. misandra</i> | <i>O. terrae-novae</i> |
| <i>C. nardina</i> var. <i>Hepburnii</i> | <i>Hedysarum alpinum</i> |
| <i>C. scirpoides</i> | <i>Epilobium latifolium</i> |
| <i>Juncus albescens</i> | <i>Cassiope tetragona</i> |
| <i>Tofieldia coccinea</i> | <i>Rhododendron lapponicum</i> |
| <i>T. palustris</i> | <i>Andromeda Polifolia</i> |
| <i>Salix alaxensis</i> | <i>Arctostaphylos rubra</i> |
| <i>S. arctica</i> | <i>Vaccinium Vitis-Idaea</i> |
| <i>S. reticulata</i> | <i>Androsace Chamaejasme</i> var. <i>arctica</i> |
| <i>Betula glandulosa</i> | <i>Pedicularis labradorica</i> |
| <i>Polygonum viviparum</i> | <i>Chrysanthemum integrifolium</i> |
| <i>Arenaria arctica</i> | <i>Antennaria densifolia</i> |
| <i>A. Rossii</i> | <i>Senecio resedifolius</i> |

Although the station is well above timber-line occasional prostrate white spruces were seen on the slopes.

TWITYA RIVER TO MACMILLAN PASS

From the head of Bolstead Creek the road climbs across a steeply terraced scree that forms the south side of a narrow pass into Trout Creek, tributary to the Twitya. Although the elevation of the pass is somewhat less than the Plains of Abraham, conditions appear even more alpine.

From the lower, tortuous canyon of Trout Creek the road again climbs over a high ridge before descending into the valley of the Twitya. From this last elevation we obtained a magnificent view of the broad valley of the Twitya just above its confluence with the Keele and the Sekwi. South of the road, above the well-forested valleys of the Keele and Sekwi, tower bold, snow-capped mountains, some of which probably reach elevations of 8,000 feet.

The scenery, which at any time would be remarkable for its grandeur, in September was particularly striking due to the riot of autumnal colours. The dark green spruce forest predominates in the valley bottoms, but on alluvial flood plains the solid green is broken by splashes of flame-coloured balsam poplars, and paper birches.

The ordinarily sombre, black spruce covered transition from flood plain to the lower slopes is here enlivened by pale greenish yellow stands of tamarack. Farther up the sides of the valleys, a zone of about 1,000 feet is tinted purple or wine-red by the tiny leaves of the ground birch and blueberry bushes. Down through this warp descend wefts of purplish brown or yellow where willow or alder follow the downward course of a mountain brook. The steep upper slopes are white, not due to an early snow cover, but because they are formed of barren screes of huge, angular blocks of limestone torn from the towering rock walls above. Here and there rock slides, like small glaciers, or avalanches, have descended to the very floor of the valley.

At Mile 135 E, the road crosses the Twitya and soon after climbs through a low pass into the valley of Godlin River. This pass is broad and covered with a muskeg of white spruce mixed with tamarack and birch. Black spruce was last seen in the valley of the Twitya, and in this pass, at Mile 142 E, the last tamarack and paper birch was seen.

PLATE V



Small tributary to Sekwi River north of Pump Station 5, near Mile 174 E.

PLATE VI



Last stand of white spruce on Godlin River near Mile 189 E.

In small lakes near the road we saw the leaves and fruiting heads of yellow water lilies.

From upper Godlin River near Godlin Lake the road crosses a low, swampy divide to the Sekwi, another tributary to Keele or Gravel River. Pump Station No. 5, at Mile 174 E, is on Sekwi River at an elevation of 3,625 feet.

The road is on the north side of the valley, which on both sides is flanked by towering white and grey walls of limestone, at the base of which are huge ramparts of fallen rocks.

From Pump Station No. 5 the road climbs to Caribou Pass, which at 5,000 feet is treeless. The last stand of continuous spruce forest is at Mile 189 E, at an elevation of 4,650 feet, and a few miles to the east we had noticed the last balsam poplars and alder.

The last spruce forest is not extensive. The trees stand far apart in an open, park-like formation on a sheltered, willow-clad slope. Most of the trees are old and gnarled, but young straight trees were seen also, suggesting that the tree line is not static. Beyond Mile 189 E, isolated trees were noted in protected places, the last at Moas Creek near Mile 207 E.

PLATE VII



Immature *pingos* or frost mounds in Macmillan Pass. Mile 225 E.

Upon entering Caribou Pass the high mountains are left behind and the valley flattens out into an open, rolling plain of gentle and mature topography. The general elevation is between 4,500 and 5,500 feet. The upper slopes are covered by alpine tundra whereas on the flats and lower slopes are wet meadows or extensive thickets of ground birch and willow. There are few outcrops of rock and the thick mantle of soil, in many places covered by a considerable thickness of peaty soil, suggests that considerable time has elapsed since the last glaciation.

From Moas Creek the road climbs over a 5,500-foot high, dome-shaped hill that commands a splendid panoramic view of the almost basin-like Macmillan Pass.

In several places *pingo* or frost mound formation was noted. A particularly fine example was seen in Macmillan Pass a short distance east of the Yukon-Northwest Territories boundary. In a swampy basin north of the road, formerly occupied by a shallow lake, several mounds were being formed by frost action of the type described by Porsild.¹ The *pingos* were rather small and immature, the largest being 150 by 50 feet and about 10 feet high. Pits dug into the summits of the *pingos* showed a fine-grained, homogenous, black peat. In the peat were numerous well-preserved rhizomes of *Menyanthes trifoliata* and

¹ Geogr. Rev. 28: 46-58 (1938).

other lacustrine plants, showing that the peat was laid down in shallow water. *Menyanthes* does not now grow in the swamp, nor elsewhere in Macmillan Pass, a fact that may indicate a deterioration of climate. Permafrost was found at a depth of 23 inches. Remnants of similar *pingos* were noted in the upper Macmillan Valley where the road had cut through a peat deposit 10 to 12 feet thick.

PLATE VIII



Distant view of *pingo* emerging in centre of former lake. Mile 225 E.

Although the elevation of Macmillan Pass is close to 5,000 feet, we found a surprisingly rich flora of alpine and arctic species. A number of calciphilous species that had not been seen in southeastern Yukon were common in the east end of the pass, but absent, or at least very rare, west of the boundary. Some species that belong in this class are:

| | |
|--------------------------------|--------------------------------------------------|
| <i>Elymus innovatus</i> | <i>Parrya nudicaulis</i> |
| <i>Alopecurus alpinus</i> | <i>Saxifraga aizoides</i> |
| <i>Carex misandra</i> | <i>Chrysanthemum integrifolium</i> |
| <i>Kobresia simpliciuscula</i> | <i>Androsace Chamaejasme</i> var. <i>arctica</i> |
| <i>Tofieldia coccinea</i> | <i>Saussurea integrifolia</i> |
| <i>Arenaria arctica</i> | |

Likewise, a number of species that are common in southeastern Yukon had penetrated a short distance past the boundary. Many of these had not been recorded previously in the Northwest Territories:

| | |
|-------------------------------|---------------------------------|
| <i>Abies lasiocarpa</i> | <i>Parnassia fimbriata</i> |
| <i>Carex pyrenaica</i> | <i>Phyllodoce empetriformis</i> |
| <i>Juncus Drummondii</i> | <i>Valeriana sitchensis</i> |
| <i>Veratrum Eschscholtzii</i> | <i>Senecio triangularis</i> |

The following list serves to illustrate the floristic composition of the meadows, grassy slopes, and flood plains of Macmillan Pass. Dominant or primary species are preceded by an asterisk. For further particulars and for species that were rare or only occasional the catalogue should be consulted.

| | |
|---------------------------|------------------------------------------------------------|
| <i>Lycopodium alpinum</i> | <i>Arctagrostis arundinacea</i> |
| <i>Equisetum arvense</i> | * <i>Calamagrostis canadensis</i> var. <i>Langsdorffii</i> |
| <i>E. variegatum</i> | <i>Trisetum spicatum</i> |
| <i>Phleum alpinum</i> | <i>Poa alpina</i> |

- P. arctica*
P. leptocoma
 **Festuca altaica*
Agropyron latiglume
Eriophorum angustifolium
E. Scheuchzeri
Carex pyrenaica
C. capillaris
 **C. podocarpa*
C. physocarpa
C. stans
C. membranacea
Juncus Drummondii
Luzula parviflora
L. Wahlenbergii
Salix alaxensis
S. Barclayi
S. Barrattiana
S. glauca
 **S. pulchra*
S. reticulata
S. Richardsonii
 **Betula glandulosa*
Rumex arcticus
Polygonum alpinum var. *lapathifolium*
Stellaria calycantha
Aconitum delphinifolium
Anemone narcissiflora
A. parviflora
A. Richardsonii
Ranunculus Eschscholtzii
Rhodiola integrifolia
Saxifraga punctata
S. rivularis
- Parnassia fimbriata*
 **Spiraea Beauverdiana*
Rubus acaulis
Potentilla fruticosa
P. diversifolia var. *glaucophylla*
P. palustris
Sibbaldia procumbens
Empetrum nigrum
 **Epilobium angustifolium*
E. latifolium
Cornus canadensis
Pyrola minor
Ledum groenlandicum
Kalmia polifolia
Cassiope tetragona
Arctostaphylos alpina
 **Vaccinium uliginosum* var. *alpinum*
 **V. Vitis-Idaea*
Gentiana glauca
Polemonium acutiflorum
Mertensia paniculata
Veronica alpina var. *alterniflora*
Valeriana sitchensis
Solidago decumbens
S. multiradiata
Antennaria monocephala
Achillea borealis
 **Artemisia arctica*
A. Tilesi
 **Petasites frigidus*
Senecio atropurpureus
S. lugens
 **S. triangularis*
Hieracium gracile

Gravelly river terraces and eskers occupy much of the pass. They support rather open thickets of from 3- to 5-foot high *Salix pulchra* and *Betula glandulosa*. The undergrowth is made up of about a dozen species, of which the following are the most important:

- **Cladonia sylvatica*
Calamagrostis canadensis var. *Langsdorffii*
 **Festuca altaica*
Carex podocarpa
Luzula parviflora
- Rubus arcticus*
Sibbaldia procumbens
Gentiana glauca
 **Artemisia arctica*

PLATE IX



Macmillan Pass near Mile 225 E. Headwaters of Keele River, gravelly river terraces and eskers covered with low willow and birch thickets and reindeer "moss".

PLATE X



Macmillan Pass looking northeast from Mile 225 E, showing road and almost level alpine tundra.

THE ALPINE FLORA OF THE EAST SLOPE OF
MACKENZIE MOUNTAINS

All specimens cited are in the Herbarium of the National Museum of Canada. Serial numbers without collector's name are those of the writer's collection. Road mileages are recorded from east to west, starting from Mile zero on the west bank of Mackenzie River.

Woodsia glabella R. Br. Mountain range west of Bolstead Creek, about Mile 111 E, Wynne-Edwards, No. 8229.

Dryopteris fragrans (L.) Schott. Little Keele River, Mile 55 E, No. 11,783; Trout Creek, Mile 118 E, No. 11,835.

Botrychium Lunaria (L.) Sw. Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,230. Spores average 30 μ in diameter.

Equisetum arvense L. Noted in Macmillan Pass and elsewhere as common.

E. scirpoides Michx. Sekwi River, Mile 174 E, No. 11,843. In addition, noted in many places.

E. variegatum Schleich. Sekwi River, Mile 174 E, No. 11,842. Also noted in Macmillan Pass, Mile 225 E.

Lycopodium alpinum L. Common in Macmillan Pass, Mile 225 E.

Lycopodium annotinum L. Common in Macmillan Pass.

L. Selago L. Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,231. Probably common.

Selaginella selaginoides (L.) Link. Bolstead Creek, Mile 111 E, No. 11,827; same place, Wynne-Edwards, No. 8,232; Little Keele River, elevation 2,200 feet, Mile 51 E, No. 11,781; Macmillan Pass, Mile 225 E, No. 11,182.

Picea glauca Voss. Sekwi River, Mile 174 E, No. 11,972; headwaters of Sekwi River, Mile 180 E, elevation 3,900 feet, first continuous spruce east of divide, No. 11,840. First spruce east of divide was seen at Mile 197 E on Moas Creek, near the headwaters of Keele River, elevation 4,600 feet.

P. mariana (Mill.) B.S.P. Noted as common on the eastern end of the road, but becoming scarce in the mountains where no extensive black spruce forest was seen. Last trees noted were on Trout Creek about Mile 120 E.

Larix laricina (du Roi) Koch. Godlin River, Mile 142 E, elevation 3,600 feet, No. 11,839; Twitya River, Mile 124 E, No. 11,837.

With the last number are cones of the preceding year. The bracts of the cone scales are narrower than in some eastern material, but some cones at least have distinctly mucronate scales as well. Such have been seen also in Alaska material in National Herbarium, Ottawa. The writer, therefore, doubts that the Alaska larch can be maintained as distinct from the eastern *L. laricina*.

Abies lasiocarpa (Hook.) Nutt. Macmillan Pass, Mile 225 E, No. 11,184.

A few stunted trees were seen in the pass just east of the boundary, but nowhere extending more than a few miles east of the divide. New to the flora of the Northwest Territories.

Juniperus communis L. Common and noted in many places.

Hierochloë alpina (Sw.) R. & S. Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,233.

Phleum alpinum L. Noted as common in Macmillan Pass, Mile 225 E.

Alopecurus alpinus Sm. Rare or occasional in Macmillan Pass, Mile 225 E, No. 11,191.

Arctagrostis arundinacea (Trin.) Beal. Noted as common in Macmillan Pass, Mile 225 E.

A. latifolia (R. Br.) Griseb. Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,235.

Calamagrostis canadensis (Michx.) Nutt. var. **Langsdorffii** (Link.) Inman. Common in Macmillan Pass, No. 11,201.

C. purpurascens R. Br. Sekwi River, Mile 174 E, elevation 3,625 feet, No. 11,844.

Vahlodea atropurpurea (Wahlenb.) Fr.—ssp. **paramushirensis** (Kudo) Hult. Macmillan Pass, Mile 225 E, just east of the divide, No. 11,194.

The previously known American range of this western race of *Vahlodea atropurpurea* is from the Aleutian Islands to the Pacific coast of Alaska and British Columbia. It is thus new to the Northwest Territories.

Deschampsia brevifolia R. Br. Macmillan Pass, Mile 225 E, No. 11,197.

This high-arctic species was previously known west to the arctic coast of the Mackenzie.

Trisetum spicatum (L.) Richt. Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,234. Noted also as common in Macmillan Pass, Mile 225 E.

Poa alpina L. Bolstead Creek, Mile 111 E, wet alpine meadow, 5,500 feet, Wynne-Edwards, No. 8,239; alpine slope, *idem* No. 8,238. Noted as common in Macmillan Pass, Mile 225 E.

P. alpigena (Fr.) Lindm. Noted in a number of places.

P. arctica R. Br. Bolstead Creek, alpine slope 5,500 feet, Mile 111 E, Wynne-Edwards, Nos. 8,240 and 8,241. Noted as common in Macmillan Pass, Mile 225 E.

P. glauca M. Vahl. Bolstead Creek, alpine slope, 5,500 feet, Mile 111 E, Wynne-Edwards, No. 8,242.

P. leptocoma Trin. Macmillan Pass, Mile 225 E, No. 11,194-A.

Previously known in the Northwest Territories from a single station in Richardson Mountains west of the Mackenzie Delta.

Arctophila fulva (Trin.) Rupr. Macmillan Pass, Mile 225 E.

Puccinellia Vahliana (Liebm.) Scribn. & Merr. in Contr. U.S. Nat. Herb. 13:78 (1910); *Poa Vahliana* Liebm. Fl. Dan. tab. 2,401; *Glyceria Vahliana* (Liebm.) Th. Fr. Vet. Akad. Öfv. 26:140 (1869); *Colpodium Vahlianum* (Liebm.) Nevski in Fl. U.R.S.S. 2:436 (1934). Plains of Abraham, Mile 82 E, bald, wind swept summit of limestone mountain, elevation 6,000 feet, in wet clay and limestone rubble, No. 11,787. Although the collection was made rather late the specimens are typical.

In North America this interesting and rare arctic species is known from the east and west coasts of North Greenland and from islands of eastern arctic Canada south to Port Burwell and west to Southampton Island in Hudson Bay. The species has not been recorded from continental Northwest Territories and is not known from Alaska. Our specimens thus grew more than 1,400 miles from the nearest known station of this plant.

Festuca altaica Trin. Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,236. Noted as a dominant species in Macmillan Pass, Mile 225 E.

F. brachyphylla Schultes. Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,237.

Agropyron latiglume (Scribn. & Sm.) Rydb. Common in Macmillan Pass, Mile 225 E, No. 11,189.

Elymus innovatus Beal. Bolstead Creek, Mile 111 E, elevation 4,420 feet, No. 11,828; Wynne-Edwards, No. 8,243, Sekwi River, Mile 174 E, No. 11,845. Very common throughout.

Eriophorum angustifolium Roth. Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,244; Macmillan Pass, Mile 225 E, No. 11,217.

E. opacum (Björnstr.) Fern. Noted as common in muskeg on small tributary to Little Keele River, Mile 51 E.

E. Scheuchzeri Hoppe. Macmillan Pass, common in a wet bog, Mile 225 E.

E. vaginatum L. Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,245.

Kobresia simpliciuscula (Wahlenb.) Mack. *K. caricina*. Willd. Plains of Abraham, Mile 82 E, bald, wind swept summit, elevation 6,000 feet, No. 11,788; Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,246; Sekwi River, Mile 174 E, No. 11,846. Common.

Carex nardina Fr. var. **Hepburnii** (Boott.) Kük. Plains of Abraham, Mile 82 E, elevation 6,000 feet, No. 11,789; Bolstead Creek, Mile 111 E, No. 11,829.

C. pyrenaica Wahlenb. Macmillan Pass, Mile 225 E, No. 11,203.

New to the flora of the Northwest Territories.

C. capitata L. Sekwi River, Mile 174 E, No. 11,854.

C. Lachenalii Schk. Noted as common in Macmillan Pass, Mile 225 E.

C. canescens L. Macmillan Pass, Mile 225 E, No. 11,216.

C. gynocrates Wormskj. Plains of Abraham, elevation 6,000 feet, No. 11,795; also noted in a muskeg on small tributary to Little Keele River, Mile 51 E.

C. Macloviana d'Urv. Macmillan Pass, Mile 225 E, No. 11,211.

C. scirpoidea Michx. Sekwi River, Mile 174 E, No. 11,853; Bolstead Creek, Mile 111 E, Wynne-Edwards, Nos. 8,252-54. Noted as common throughout.

C. glacialis Mack. Plains of Abraham, bald limestone mountain, No. 11,790; Sekwi River, Mile 174 E, No. 11,849.

C. rupestris All. Plains of Abraham, Mile 82 E, No. 11,791.

C. eburnea Boott. Sekwi River, Mile 174 E, elevation 3,625 feet, No. 11,947.

C. vaginata Tausch. Plains of Abraham, Mile 82 E, No. 11,794; Bolstead Creek, Mile 111 E, Wynne-Edwards, Nos. 8,255-57.

C. capillaris L. Sekwi River, Mile 174 E, elevation 3,625 feet, No. 11,852; Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,260; Macmillan Pass, Mile 225 E, No. 11,209.

C. petricosa Dew. Bolstead Creek, Mile 111 E, elevation 4,420 feet, No. 11,830; same place, Wynne-Edwards, No. 8,251; Sekwi River, Mile 174 E, No. 11,848.

A considerable extension of the known range of this rare species.

C. misandra R. Br. Plains of Abraham, Mile 82 E, elevation 6,000 feet, No. 11,792; Bolstead Creek, Mile 111 E, Wynne-Edwards, Nos. 8,247-50. Noted also in Macmillan Pass at Mile 219 E.

C. atrofusca Schk. Plains of Abraham, bald limestone mountain, 6,000 foot elevation, Mile 82 E, No. 11,793.

C. rariflora (Wahlenb.) Sm. Arctic tundra east end of Macmillan Pass, Mile 204 E, No. 11,885.

C. media R. Br. in Richardson in Franklin's Journ. App. 750, 1823; *C. Vahlü* Schk. var. *inferalpina sensu* Fernald in *Rhodora* 35:220-223, 398 (1935) *non* Wahlenb.; *C. angarac* Steud. See *Rhodora* 41:203-205 (1939). Macmillan Pass, Mile 225 E, No. 11,208.

C. nesophila Holm. Mountain slope south of Little Keele River, Mile 55 E, No. 11,784; Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,258.

C. podocarpa R. Br. Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,259. Noted as common in Macmillan Pass, Mile 225 E, and elsewhere.

C. atrosquama Maek. Macmillan Pass, Mile 225 E, No. 11,215.

C. physocarpa Presl. Sekwi River, Mile 174 E, No. 11,851; Macmillan Pass, Mile 225 E, No. 11,206.

C. stans Drej. Macmillan Pass, Mile 225 E, No. 11,213.

C. membranacea Hook. Bolstead Creek, Mile 111 E, Wynne-Edwards, Nos. 8,261-62; Sekwi River, Mile 174 E, elevation 3,625 feet, No. 11,850; Macmillan Pass, Mile 225 E, No. 11,202. Probably common throughout.

Juncus albescens (Lge.) Fern. Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,263.

J. biglumis L. Plains of Abraham, Mile 82 E, No. 11,797.

J. castaneus Sm. Noted on tributary to Little Keele River, Mile 51 E.

J. Drummondii E. Mey. Macmillan Pass, Mile 225 E, No. 11,218.

A very considerable extension of the known range of this species, which has been recorded previously from the Aleutian Islands, the south coast of Alaska south to California and east to Alberta.

J. triglumis L. Plains of Abraham, Mile 82 E, No. 11,796.

A considerable extension of the known range of this species.

Luzula arcuata Wahlenb. East end of Macmillan Pass, alpine tundra, elevation 4,600 feet, No. 11,884.

New to the flora of the Northwest Territories.

L. confusa Lindbl. Bolstead Creek, Mile 111 E, Wynne-Edwards, Nos. 8,264-65; Macmillan Pass, Mile 225 E, No. 11,219.

L. nivalis (Laest.) Beurl. Plains of Abraham, Mile 82 E, No. 11,798.

L. parviflora (Ehrh.) Desv. Noted as common in Macmillan Pass, Mile 225 E.

L. Wahlenbergii Rupr. Noted as common in Macmillan Pass, Mile 225 E.

Tofieldia coccinea Richards. Bolstead Creek, Mile 111 E, No. 11,831; same place, Wynne-Edwards, No. 8,268.

T. palustris Huds. Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,269; Sekwi River, Mile 174 E, No. 11,855.

Zygodenus elegans Pursh. Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,266.

Veratrum Eschscholtzii A. Gray. Sterile specimens were noted in Macmillan Pass on the Yukon-Mackenzie divide.

A notable extension of the known range of this plant, which was previously recorded north to the south coast of Alaska.

L'oydia serotina (L.) Rehb. Plains of Abraham, Mile 82 E, No. 11,799; Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,267; Sekwi River, Mile 174 E, No. 11,856. Common in alpine tundra.

Cypripedium passerinum Richards. Sekwi River, Mile 174 E, elevation 3,625 feet, No. 11,857.

Populus tacamahacca Mill. Noted as common along creeks and rivers. Last trees noted were in the last continuous stand of spruce, near headwaters of Sekwi River, Mile 180 E.

Salix alaxensis Cov. Bolstead Creek, Mile 112 E in an alpine bog, Wynne-Edwards, No. 8,270; Macmillan Pass, Mile 225 E, No. 11,228.

S. arbusculoides Anders. Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,271; Sekwi River, Mile 174 E, No. 11,859.

S. arctica Pall. Plains of Abraham, Mile 82 E, No. 11,801; Bolstead Creek, Mile 112 E, elevation 4,500-5,500 feet, Wynne-Edwards, No. 8,272. Apparently common on alpine slopes.

S. Barclayi Anders. Common in Macmillan Pass, Mile 225 E, No. 11,224.

S. Barrattiana Hook. Bolstead Creek, Mile 111 E, elevation 5,500 feet, Wynne-Edwards, No. 8,273; Sekwi River, Mile 174 E, elevation 3,625 feet, Nos. 11,841 and 11,858; Macmillan Pass, Mile 225 E, No. 11,223.

Common in alpine passes and valley bottoms. New to the flora of the Northwest Territories.

S. glauca L. East end of Macmillan Pass, Mile 220 E, No. 11,886.

S. myrtilifolia Anders. Sekwi River, Mile 174 E, No. 11,860. Noted as common by a creek near Mile 51 E.

S. phlebophylla Anders. Plains of Abraham, Mile 82 E, in limestone rubble, No. 11,800; Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,274; Sekwi River, Mile 174 E, elevation 3,625 feet, No. 11,861.

A considerable extension of the known range of this species, which, in the Northwest Territories, was known only from the Mackenzie Delta. Common everywhere on limestone above timber-line.

S. pseudopolaris Flod. Bolstead Creek, Mile 111 E, alpine slope, elevation 5,500 feet, Wynne-Edwards, Nos. 8,275-77.

S. pulchra Cham. Macmillan Pass, Mile 225 E, No. 11,229.

S. reticulata L. Bolstead Creek, Mile 112 E, alpine bog, 5,500 feet, Wynne-Edwards, Nos. 8,278-79. Also noted as common in Macmillan Pass.

S. Richardsonii Hook. Macmillan Pass, Mile 225 E, No. 11,227. Noted also as common in a muskeg at Mile 51 E.

S. Scouleriana Barratt. Bushes 20 feet tall were noted on a small tributary to Godlin River, Mile 168 E.

The species is new to the flora of the Northwest Territories.

Betula glandulosa Michx. Bolstead Creek, Mile 111 E, wet alpine bog, 5,500 feet, Wynne-Edwards, No. 8280. Common throughout.

B. papyrifera Marsh var. **neoalaskana** (Sarg.) Raup. Twitya River valley, Mile 124 E, No. 11,838. Common from the Mackenzie Valley to Mile 142 E, where the species was last noted.

Alnus crispa Michx. Noted as common on the eastern part of the road. Last seen on upper Godlin River at Mile 142 E.

Oxyria digyna (L.) Hill. Bolstead Creek, Mile 111 E, alpine peak, elevation 6,000-7,000 feet, Wynne-Edwards, No. 8281.

Rumex arcticus Trautv. Noted as common in Macmillan Pass, Mile 225 E.

Polygonum alpinum All. var. **lapathifolium** Cham. & Schlecht. Noted as common in Macmillan Pass, on river bars.

P. Bistorta L. ssp. **plumosum** (Small) Hult. Fl. Alaska and Yukon 4:613 (1944). Bolstead Creek, Mile 111 E, alpine slope, 5,500 feet, Wynne-Edwards, No. 8,282.

P. viviparum L. Bolstead Creek, Mile 111 E, alpine slope, 5,000 feet, Wynne-Edwards, No. 8,283; noted as occasional or rare in Macmillan Pass, Mile 225 E.

Claytonia megarrhiza (Gray) Parry. Bolstead Creek, Mile 111 E, alpine slopes of west wall, elevation 4,500-5,500 feet, Wynne-Edwards, No. 8,626.

The specimens, which are past flowering and with a few mature fruits, perfectly match specimens in the National Herbarium of Canada from Banff, the nearest Canadian station, more than 1,000 miles to the south.

Stellaria calycantha (Ledeb.) Bong. Noted as common in Macmillan Pass, Mile 225 E.

S. longipes Goldie. Bolstead Creek, Mile 111 E, alpine slopes, Wynne-Edwards, Nos. 8,296-97; noted as occasional or rare in Macmillan Pass, Mile 225 E.

Cerastium Beeringianum Cham. & Schlecht. Bolstead Creek, Mile 111 E, high peaks 5,500 feet, Wynne-Edwards, No. 8,295.

Arenaria arctica Stev. Plains of Abraham, Mile 82 E, No. 11,805; Bolstead Creek, Mile 111 E, alpine slopes, Wynne-Edwards, Nos. 8,287-90.

A considerable extension of the known range of a species previously recorded in the Northwest Territories only from the arctic coast near the Mackenzie Delta.

A. humifusa Wahlenb. Plains of Abraham, Mile 82 E, elevation 6,000 feet, very scarce in wet limestone rubble, No. 11,803; Bolstead Creek, Mile 111 E, alpine slopes, Wynne-Edwards, No. 8,291.

A. macrocarpa Pursh. Alpine slopes south of Little Keele River, Mile 55 E, elevation 4,000 feet, No. 11,785; Bolstead Creek, Mile 111 E, alpine slope, 5,500 feet, Wynne-Edwards, Nos. 8,292-93.

New to the flora of the Northwest Territories, and in Canada previously known only from a few collections on the arctic coast of Yukon, west of the Mackenzie.

A. Rossii R. Br. *apud* Richards. Plains of Abraham, Mile 82 E, elevation 6,000 feet, No. 11,804; Bolstead Creek, Mile 111 E, alpine peak, 5,500 feet, Wynne-Edwards, No. 8,294. A very common species on limestone rubble of the higher mountain slopes.

A. sajanensis Willd. Plains of Abraham, Mile 82 E, elevation 6,000 feet, No. 11,806. Noted as occasional in Macmillan Pass, Mile 225 E.

A. uliginosa Schleich. Sekwi River, Mile 174 E, elevation 3,625 feet, No. 11,862.

Silene acaulis L. var. **exscapa** (All.) DC. Bolstead Creek, Mile 112 E, alpine slope, 5,500 feet, Wynne-Edwards, No. 8,284.

Melandrium apetalum (L.) Fenzl. Plains of Abraham, Mile 82 E, No. 11,802.

M. macrospermum Porsild, *Rhodora* 41:225 (1939). Bolstead Creek, Mile 111 E, alpine slopes, Wynne-Edwards, Nos. 8,285-86.

Both numbers were collected on July 25 and have flowers and immature fruits. The strongly inflated young calyces are soft pubescent with 2 mm. long, strongly septate, purplish, non-glandular hairs, especially along the ribs. The peduncles are covered with a dense, soft, white, non-glandular pubescence. In No. 8,285 the deep rose petals are well exerted. The seeds, even though immature, are 2 mm. in diameter with a very broad wing.

M. macrospermum was previously known from Nome and Unalakleet (Type) in western Alaska and from mountains in Mount McKinley Park.

Nuphar variegatum Engelm. The species was noted in small ponds south of Godlin River, about Mile 164 E.

Aconitum delphinifolium DC. Bolstead Creek, Mile 111 E, flowering specimens on July 25 in an alpine bog, 4,700 feet, Wynne-Edwards, No. 8,304. Noted also on Sekwi River, and in Macmillan Pass.

Delphinium glaucum Wats. Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,303. Flowering specimens on July 26; Macmillan Pass, Mile 225 E, No. 11,235.

Anemone narcissiflora L. Noted in Macmillan Pass, Mile 220 E.

A. parviflora Michx. Bolstead Creek, Mile 111 E, high alpine slopes. 4,400-5,500 feet, Wynne-Edwards, Nos. 8,301-02. Flowering and fruiting specimens on July 24-25. Noted as occasional in Macmillan Pass, Mile 225 E.

A. Richardsonii R. Br. Noted as common in Macmillan Pass, Mile 225 E.

Pulsatilla ludoviciana (Nutt.) Heller. Noted in Macmillan Pass, Mile 220 E.

Ranunculus Eschscholtzii Schlecht. Noted as common in Macmillan Pass, Mile 225 E.

R. nivalis L. Bolstead Creek, Mile 111 E, alpine slopes, 6,000 foot elevation, Wynne-Edwards, No. 8,299; Macmillan Pass, Mile 225 E, No. 11,233.

In the Northwest Territories this species was previously known only from the arctic coast.

R. pygmaeus Wahlenb. Bolstead Creek, Mile 111 E, alpine slopes, Wynne-Edwards, No. 8,300; Macmillan Pass, Mile 225 E, No. 11,234.

Thalictrum alpinum L. Bolstead Creek, Mile 111 E, high alpine slopes, 5,500 feet, Wynne-Edwards, No. 8,298. Noted as common in alpine tundra near the east end of Macmillan Pass, Mile 220 E.

New to the flora of the Northwest Territories.

Papaver Keelei n.sp.

Herba perennis, radice fusiformi tenui; foliis saturate viridibus lanceolatis 5-8 cm. longis, profunde pinnatim lobatis, subtus dense stramineo-strigosis, supra subglabris, petiolis laminis subaequantibus; scapo plerumque solitario 10-30 cm. alto patenter strigoso-pubescente; floribus 2-3 cm. diametro, petalis sulphureis, non viridescens; capsulis anguste obovoideis, apice subacutis, stigmatibus obtusis non acutis.

Papaver Keelei appears to be well marked by its weak caudices and non-caespitose growth-habit and by the deep green very short leaves. It appears to be restricted to calcareous soils and prefers moist springy places. It is common on alpine slopes east of the divide and was frequently seen in muskegs and by brooks in places where arctic-alpine species of *Papaver* are not usually found.

Plains of Abraham, Mile 82 E, No. 11,807, common in wet limestone rubble by alpine brooks, etc., elevation 6,000 feet, No. 11,807; small tributary to Little Keele River, Mile 51 E, elevation 2,200 feet, No. 11,782 (Type); Bolstead Creek, Mile 111 E, wet, alpine meadow, 5,500 feet, Wynne-Edwards, Nos. 8,305 and 8,307; same place, alpine peak, 7,000 feet elevation, Wynne-Edwards, No. 8,306. The specimens in the last number were in flower on July 26, the rest were in fruit.

The species is named in honour of Joseph Keele, geologist of the Geological Survey of Canada, who, in 1907-08, made a reconnaissance survey across the Mackenzie Mountains from Ross River to the Mackenzie.

Eutrema Edwardsii R. Br. Plains of Abraham, Mile 82 E, elevation 6,000 feet, rare in *Cassiope tetragona* heath, No. 11,808; Bolstead Creek, Mile 111 E, alpine meadow, 4,500-5,500 feet, Wynne-Edwards, No. 8,308.

Cardamine pratense L. Noted in Macmillan Pass, Mile 225 E.

Draba Bellii Holm. Plains of Abraham, Mile 82 E, No. 11,811; Bolstead Creek, Mile 111 E, high ridge east of Pump Station, elevation 6,000 feet, Wynne-Edwards, No. 8,314; west slope of valley, *idem*, Nos. 8,313 and 8,312.

The above numbers represent a considerable extension of the known range of this eastern arctic species, previously known west along the arctic coast to Mackenzie River.

D. glabella Pursh. Bolstead Creek, Mile 111 E, in alpine bog, 5,000 feet, Wynne-Edwards, Nos. 8,310-11.

D. sp. Bolstead Creek, Mile 111 E, alpine slope, Wynne-Edwards, No. 8,315.

The single specimen in the collection is that of a caespitose, small, white-flowered, scapose plant with narrow, oblanceolate, distinctly petiolate leaves covered by a loose, stellate pubescence mixed with long, simple hairs along the margins of the leaves and petioles. The scapes and sepals are glabrous.

Melanidion boreale Greene, *Ott. Naturalist* 25:146 (1912); *Acroschizocarpus Kolianus* Gombocz, *Bot. Kolzlemyek* 37:1 (1940). Plains of Abraham, Mile 82 E, on barren, wind swept hill, in limestone rubble, elevation 6,000 feet, No. 11,809; Sekwi River, Mile 174 E, in a limestone scree, elevation 3,625 feet, No. 11,865; Bolstead Creek, Mile 111 E, in a limestone scree, Wynne-Edwards, No. 8,318.

This curious plant was first collected by D. D. Cairnes, of the Geological Survey of Canada, on the Alaska-Yukon boundary, north of Runt Creek, longitude 141° west and latitude 66°18' north in an altitude of 2,300 feet, on July 4, 1911. Cairnes' specimen, which consists of a fruiting plant without roots or basal leaves, is the type on which Greene based his, necessarily, incomplete description. Three small flowering specimens, again without roots, were obtained the following year by Cairnes some 40 miles north of the type locality, June 14, 1912. These two small collections, both in the National Herbarium of Canada, long remained the only collections of this strange, monotypic genus. Hultén (*Bot. Not.* 1940, p. 170) states that a second station has been found in Mount McKinley National Park, Alaska, and that it was described as *Acroschizocarpus Kolianus* Gombocz, l.c.

The present collections add three new stations, the nearest 400 miles from the type locality. The specimens are all in fruit, but in view of the larger material of complete specimens it is possible now to give a more complete description.

The root is a strong, sub-ligneous tap-root, which ends in a simple or branching crown of one to several rosettes of densely imbricated leaves; leaves are about 3 cm. long, cuneate, tri-lobate, the central lobe largest about 0.8 cm. long, the lateral smaller, the blade tapering gradually into an 0.3 cm. broad petiole. The entire leaf surface is greyish white, densely pannose with a pink tinge. The old leaves remain for several years. In old individuals, the lower part of the stem is sub-ligneous with a shiny, yellowish, shreddy bark showing numerous old leaf scars. The flowering stems, which are covered with a white or greyish, loose felt, appear early and are stiffly erect and branched, bearing a racemose inflorescence that rapidly elongates towards maturity; the flowers appear singly or several together on 1 cm. long, curved peduncles. Aestival flowering stems are present in several specimens and differ markedly by being ascending or even decumbent and leafy, with the flowers appearing in leaf axils. The sepals are densely hirsute, the petals twice as long as the sepals, about 4 mm. long, dark purple.

Greene, l.c., states that the siliques are one-celled and that the partition is obsolete. In the better material now before me the siliques are distinctly two-celled, with a complete partition, and two seeds in each cell.

The species does not fruit well and less than one-tenth of the flowers in each inflorescence are fertile. Seeds are large, 2.0 mm. long and 1.5 mm. broad, flattened with incumbent cotyledons; the testa is smooth, light brown.

Melanidion boreale flowers early in June and on July 4 had mature fruits. A second flowering appears to take place in August, at least in some specimens. It grows on a loose limestone rubble and in the Mackenzie Range reaches an elevation of 6,000 feet.

Arabis lyrata L. var. **glabra** (DC.) Hopkins. Noted in Macmillan Pass, Mile 225 E.

Parrya nudicaulis (L.) Regel. Plains of Abraham, Mile 82 E, No. 11,810; Bolstead Creek, Mile 111 E, Wynne-Edwards, Nos. 8,316-17; Sekwi River, Mile 174 E, No. 11,963.

Braya purpurascens R. Br. Plains of Abraham, Mile 82 E, No. 11,812.

The species apparently was rare and only a few plants were collected, in wet places on limestone rubble. The specimens are so advanced that a definite determination is not possible. The styles are rather too long for that species, being 1.0 to 1.5 mm. long.

B. sp. Bolstead Creek, Mile 111 E, alpine slope, Wynne-Edwards, No. 8,309.

B. sp. Sekwi River, Mile 174 E, No. 11,864.

A single specimen of a curious looking *Braya*, which, except for its rather short tap-root, is perhaps closest to *B. humilis* (C.A.Mey.) Robins. The material, however, is so scant and the specimen so far gone that definite determination is not possible.

Rhodiola integrifolia Raf. Noted as common in Macmillan Pass, Mile 225 E.

Saxifraga aizoides L. Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,322; Sekwi River, Mile 174 E, No. 11,867.

S. cernua L. Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,321.

S. flagellaris Willd. Bolstead Creek, Mile 111 E, alpine slopes to 7,000 feet, Wynne-Edwards, Nos. 8,330-31.

S. hieracifolia W. & K. Bolstead Creek, Mile 111 E, alpine ridge, 5,000-6,000 feet, Wynne-Edwards, Nos. 8,323-24.

S. Hirculus L. Bolstead Creek, Mile 111 E, alpine slopes to 7,000 foot elevation, Wynne-Edwards, Nos. 8,328-29.

S. Lyallii Engler. Bolstead Creek, Mile 111 E, alpine slopes to 7,000 feet, Wynne-Edwards, Nos. 8,325-27; Macmillan Pass, Mile 225 E, No. 11,240.

New to the flora of the Northwest Territories.

S. oppositifolia L. Plains of Abraham, Mile 82 E, No. 11,813; Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,332.

S. punctata L. Noted as common in Macmillan Pass, Mile 225 E.

S. radiata Small. Macmillan Pass, Mile 225 E, No. 11,239. Very rare in an alpine meadow.

In the Northwest Territories previously recorded from mountains west of the Mackenzie Delta (Porsild).

S. rivularis L. Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,333. Noted as common in Macmillan Pass, Mile 225 E.

S. serpyllifolia Pursh. Bolstead Creek, Mile 111 E, alpine ridge, 7,000 feet elevation, Wynne-Edwards, No. 8,334.

The above collection constitutes a very considerable extension of the known range of this pretty little saxifrage, which is common on islands and rocky shores of Bering Sea, with a single station in the Alaska Range (Porsild, *Rhodora* 41: 242 (1939)).

The species does not appear to have been recorded from Yukon, although there is, in the National Herbarium of Canada, a single collection from the north fork of the Klondike, W. E. Cockfield, No. 29 (Can.). The species is thus new to the flora of Canada.

S. tricuspidata Rottb. Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,320.

Chrysosplenium tetrandrum (Lund) Fries. Noted as occasional or rare in Macmillan Pass, Mile 225 E.

Parnassia fimbriata Koenig. Macmillan Pass, Mile 225 E, common in alpine meadows, No. 11,238.

New to the flora of the Northwest Territories.

P. Kotzebuei Cham. & Schlecht. Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,319. Noted as common in Macmillan Pass, Mile 225 E.

P. palustris L. var. **neogaea** Fern. Noted as common on small tributary to Little Keele River, Mile 51 E.

Spiraea Beauverdiana Schneid. Noted as very common in Macmillan Pass, Mile 225 E.

Rubus acaulis Michx. Noted as common in Macmillan Pass, Mile 225 E.

Potentilla biflora Willd. Plains of Abraham, Mile 82 E, on rocky slope with *Cassiope tetragona*, elevation 6,000 feet, No. 11,814; Bolstead Creek, Mile 111 E, alpine ridge, 5,500 feet, Wynne-Edwards, Nos. 8,339-40.

New to the flora of the Northwest Territories.

P. elegans Cham. & Schlecht. Alpine rocky slopes south of Little Keele River, Mile 55 E, elevation 4,000 feet, No. 11,786.

The above number extends the known range of this rare Asiatic *Potentilla* to Canada. The species has only recently been recorded from North America (Porsild, *Rhodora*, 41:246 (1939)) and only from two stations (Seward Peninsula and central Alaska).

P. emarginata Pursh. Bolstead Creek, Mile 111 E, alpine ridge, 6,000 feet, Wynne-Edwards, No. 8,337.

P. fruticosa L. Noted as common all along the road.

P. diversifolia Lehm. var. **glaucophylla** Lehm. Common in Macmillan Pass, Mile 225 E, Nos. 11,245-6.

New to the flora of the Northwest Territories.

P. palustris (L.) Scop. Noted in ponds in Macmillan Pass, Mile 225 E.

P. uniflora Ledeb. Plains of Abraham, Mile 82 E, No. 11,815; Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,338.

Sibbaldia procumbens L. Noted as very common in Macmillan Pass, Mile 220-225 E.

Geum macrophyllum Willd. var. **perincisum** (Rydb.) Raup. Macmillan Pass, Mile 225 E, No. 11,241.

Dryas Drummondii Richards. Sekwi River, Mile 174 E, No. 11,868.

D. integrifolia M. Vahl. Bolstead Creek, Mile 111 E, alpine ridge, 5,000-5,500 feet, Wynne-Edwards, No. 8,336; Sekwi River, Mile 174 E, Nos. 11,869 and 11,870. The last number is the var. *intermedia* Nath. Common in many places along the road.

D. octopetala L. Plains of Abraham, Mile 88 E, No. 11,816; Bolstead Creek, Mile 111 E, alpine slope, Wynne-Edwards, No. 8,334.

Lupinus arcticus Wats. Noted as common in a muskeg near Little Keele River, Mile 51 E.

Astragalus frigidus (L.) Bunge var. **littoralis** (Hook.) Wats. Bolstead Creek, Mile 111 E, alpine, turfy slopes, 4,500-5,500 feet, Wynne-Edwards, Nos. 8,347-48.

Oxytropis ?campestris (L.) DC. See Porsild, *Sargentia* 4:52 (1943). Bolstead Creek, Mile 111 E, No. 11,834.

The specimen cannot be determined positively because the young legumes were killed by early frost.

O. hudsonica (Greene) Fern. Bolstead Creek, Mile 111 E, No. 11,832; same place, Wynne-Edwards, No. 8,342.

O. hyperborea Porsild, *Sargentia* 4:53 (1943). Bolstead Creek, Mile 111 E, alpine bog, 5,000 feet, Wynne-Edwards, Nos. 8,343-44.

O. Maydelliana Trautv. Plains of Abraham, Mile 82 E, No. 11,818; Bolstead Creek, Mile 111 E, alpine ridge 6,500-7,000 feet, Wynne-Edwards, No. 8,341; Sekwi River, Mile 174 E, No. 11,872.

O. pygmaea (Pall.) Fern. Bolstead Creek, Mile 111 E, alpine slope, 6,000 feet, Wynne-Edwards, No. 8,345.

O. terrae-novae Fern. Plains of Abraham, Mile 82 E, No. 11,817; Bolstead Creek, Mile 111 E, No. 11,833, fruiting specimens, Sept. 6; same place, alpine slope, 6,000 feet, flowering specimens, July 25, Wynne-Edwards, No. 8,346; Sekwi River, Mile 174 E, No. 11,873.

The above numbers represent a very notable extension of the known range of this species, which heretofore has been considered an endemic of Newfoundland, the coast of Labrador, and southern Baffin Island. Its nearest eastern station is at Port Harrison on the east coast of Hudson Bay, more than 1,600 miles from the east slope of the Mackenzie Mountains.

O. terrae-novae appears to be one of the most common members of this genus on the upper slopes of the mountains east of the Yukon-Mackenzie divide, where it grows in turfey places on limestone barrens.

Hedysarum alpinum L. Bolstead Creek, Mile 111 E, alpine slopes, 5,000 feet, Wynne-Edwards, No. 8,350.

H. Mackenzii Richards. Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,349; Sekwi River, Mile 174 E, No. 11,871.

In the last number the specimens consist of stout rhizomes with fascicles of peculiar, long-petiolate, pinnate leaves, most of which show only the terminal leaflet whereas others have one or two pairs of lateral leaflets. The roots and the texture and shape of the leaflets are strongly suggestive of *Hedysarum Mackenzii*. It is probably a teratological form caused by the grazing of mountain sheep.

Empetrum nigrum L. Bolstead Creek, Mile 111 E, alpine slopes, 5,500 feet, Wynne-Edwards, No. 8,352.

Epilobium angustifolium L. Noted as common in Macmillan Pass, Mile 225 E.

E. anagallidifolium Lam. Rare or occasional in Macmillan Pass, Mile 225 E, No. 11,250.

A very notable extension of the known range of this species in Canada, otherwise known from Ungava Peninsula and from mountains of Alberta and British Columbia.

E. lactiflorum Haussk. Macmillan Pass, Mile 225 E, No. 11,249.

New to the flora of the Northwest Territories and a considerable extension of the known range of this species, the nearest Canadian station of which is in northern British Columbia.

E. latifolium L. Bolstead Creek, Mile 111 E, alpine bog, 4,700 feet, Wynne-Edwards, No. 8,351. Noted as common throughout.

Heracleum lanatum Michx. Macmillan Pass, Mile 225 E, No. 11,252.

New to the flora of the Northwest Territories.

Cornus canadensis L. Noted as common in Macmillan Pass, Mile 225 E.

Moneses uniflora (L.) Gray. Noted on tributary to Godlin River, Mile 168 E.

Pyrola asarifolia Michx. var. **incarnata** (DC.) Fern. Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,354; Macmillan Pass, Mile 225 E, No. 11,254.

P. grandiflora Rad. Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,353; Sekwi River, Mile 174 E, No. 11,874.

P. minor L. Noted as common in Macmillan Pass, Mile 225 E.

P. secunda L. var. **obtusata** Turcz. Sekwi River, Mile 174 E, No. 11,875; Macmillan Pass, Mile 225 E, No. 11,253.

Ledum decumbens (Ait.) Small. Bolstead Creek, Mile 111 E, alpine slope, 5,000 feet, Wynne-Edwards, No. 8,357; Trout Creek, Mile 118 E, No. 11,836.

L. groenlandicum Oed. Macmillan Pass, Mile 225 E, No. 11,257.

Rhododendron lapponicum (L.) Wahlenb. Bolstead Creek, Mile 111 E, alpine slope, 5,000 feet, Wynne-Edwards, No. 8,358; Sekwi River, Mile 174 E, No. 11,877.

Phyllodoce empetriformis (Sm.) D. Don. Macmillan Pass, Mile 225 E, No. 11,259.

New to the flora of the Northwest Territories.

Loiseleuria procumbens (L.) Desv. Macmillan Pass, Mile 225 E, No. 11,260.

Kalmia polifolia Wang. Macmillan Pass, Mile 225 E, No. 11,258.

Cassiope tetragona (L.) Don. Bolstead Creek, Mile 111 E, Wynne-Edwards, Nos. 8,355-56. Noted as common on Plains of Abraham, Mile 82 E, Macmillan Pass, Mile 225 E, and elsewhere.

Andromeda Polifolia L. Bolstead Creek, Mile 111 E, alpine slope, 5,000 feet, Wynne-Edwards, No. 8,359; Sekwi River, Mile 174 E, No. 11,876.

Arctostaphylos alpina (L.) Spreng. Noted as common in Macmillan Pass, Mile 225 E.

A. rubra (Rehd. & Wils.) Fern. Noted as occasional in Macmillan Pass, Mile 225 E, No. 11,255.

A. Uva-Ursi (L.) Spreng. Noted as common on small tributary to Little Keele River, Mile 51 E.

Vaccinium uliginosum L. var. **alpinum** Big. Bolstead Creek, Mile 111 E, alpine bog, Wynne-Edwards, No. 8,360. Common along the road.

V. Vitis-Idaea L. var. **minus** Lodd. Noted as a dominant species in heath in Macmillan Pass, Mile 225 E. Probably common elsewhere.

Oxycoccus microcarpus Turcz. Macmillan Pass, Mile 225 E, No. 11,256.

Androsace Chamacjasma Host. var. **artica** Knuth. Bolstead Creek, Mile 111 E, alpine slope, Wynne-Edwards, No. 8,361; Sekwi River, Mile 174 E, No. 11,878.

Armeria vulgaris Willd. ssp. **artica** (Wallr.) Hult. Plains of Abraham, Mile 82 E, No. 11,819, the specimens with mature fruits; Bolstead Creek, Mile 111 E, wet, alpine slope, 5,500 feet, flowering specimens on July 25, Wynne-Edwards, No. 8,364.

Gentiana arctophila Griseb. Macmillan Pass, Mile 225 E, No. 11,262.

G. glauca Pall. Bolstead Creek, Mile 111 E, alpine slope, Wynne-Edwards, No. 8,362. Noted as common in Macmillan Pass, Mile 225 E.

G. propinqua Richards. Bolstead Creek, Mile 111 E, alpine slope, 5,500 feet, Wynne-Edwards, No. 8,363.

Polemonium acutiflorum Willd. Bolstead Creek, Mile 111 E, wet alpine slope, 4,700 feet, Wynne-Edwards, No. 8,365. Noted as common in Macmillan Pass, Mile 225 E.

P. boreale Adams. Bolstead Creek, Mile 111 E, high, alpine ridge, elevation 6,000-7,000 feet, flowering specimens on July 25, Wynne-Edwards, No. 8,366.

Except for the much narrower petals the above plants are a good match for specimens from Siberia and Novaja Zembla and from northwestern Alaska. They are smaller than a series in the National Herbarium of Canada from Pribilof Islands collected by J. M. Macoun.

Myosotis alpestris Schm. ssp. **asiatica** Vestergr. Macmillan Pass, Mile 225 E, No. 11,263.

Mertensia paniculata (Ait.) Don. Noted as common in Macmillan Pass, Mile 225 E.

Veronica alpina L. var. **alterniflora** Fern. Rhod. 41:455 (1939). Noted as common in meadows in Macmillan Pass, Mile 225 E.

Specimens from the west side of the Pass were kindly determined by Professor Fernald. New to the flora of the Northwest Territories.

Castilleja pallida (L.) Spreng. ssp. **elegans** (Ostf.) Pennell. Bolstead Creek, Mile 111 E, alpine slopes, Wynne-Edwards, No. 8,375.

Pedicularis arctica R. Br. Plains of Abraham, Mile 82 E, No. 11,822; Bolstead Creek, Mile 11 E, alpine slope, 5,000-6,000 feet, Wynne-Edwards, Nos. 8,367-68.

P. capitata Adam. Bolstead Creek, Mile 111 E, alpine slope, Wynne-Edwards, No. 8,374.

P. labradorica Wirs. Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,373.

P. lanata Cham. & Schlecht. Plains of Abraham, Mile 82 E, No. 11,821; Bolstead Creek, Mile 111 E, alpine slope, 5,000 feet, Wynne-Edwards, No. 8,369.

P. sudetica Willd. Plains of Abraham, Mile 82 E, No. 11,820; Bolstead Creek, Mile 111 E, wet, alpine slopes, 5,000 feet, Wynne-Edwards, Nos. 8,370-72.

Pinguicula vulgaris L. Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,376.

Galium trifidum L. Macmillan Pass, Mile 225 E, No. 11,264.

Valeriana sitchensis Bong. Macmillan Pass, Mile 225 E, No. 11,265.

New to the flora of the Northwest Territories.

Campanula aurita Greene. Bolstead Creek, Mile 111 E, alpine slope, Wynne-Edwards, No. 8,377; Sekwi River, Mile 174 E, No. 11,879.

New to the flora of the Northwest Territories.

Solidago decumbens Greene. Sekwi River, Mile 174 E, No. 11,883. Noted as common in Macmillan Pass, Mile 225 E.

S. multiradiata Ait. Bolstead Creek, Mile 111 E, alpine slopes, 5,000-6,000 feet, Wynne-Edwards, No. 8,378; Macmillan Pass, Mile 225 E, No. 11,266.

Aster sibiricus L. Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,379; Macmillan Pass, Mile 225 E, No. 11,278.

Erigeron unalashkensis (DC.) Vierh. Plains of Abraham, Mile 82 E, No. 11,826; Bolstead Creek, Wynne-Edwards, No. 8,380.

E. hyssopifolius Michx. Noted as common on small tributary to Little Keele River, Mile 51 E.

Antennaria densifolia n.sp.

Planta humifusa, stolonibus foliolis valde confertis perbrevibus; foliis basilaribus cuneato-obovatis vel late oblanceolatis obtusis nec mucronatis 0.5-0.6 cm. longis 0.3 cm. latis utrinque dense tomentosis; caule florifero 6.0-9.0 cm. alto, gracile floccoso-tomentoso; foliis caulinis 5-7 subapproximatis linearibus, imis 0.6-1.0 cm. longis 0.1 cm. latis acutis apice subulatis, superioribus minoribus apice scarioso lanceolato munitis; calathiis femineis 2-4 campanulatis corymbosis, pedicellis 0.5 cm. longis; involucro 0.5 cm. alto basi dense lanato; bracteis 2- ad 3-seriatis subaequalibus lanceolatis subacutis, exterioribus badiis basi viridescentibus, interioribus erosis, brunneis; corolla apice purppurascens; stylo exserto bifido; achaeniis laevibus; calathiis masculinis parvis; involucro 0.4 cm. alto; bracteis subaequalibus late oblanceolatis patentibus; pappo plumoso, apice paulo clavato.

Type: Mountain range west of head of Bolstead Creek, 6 miles northwest of Pump Station No. 4, Mile 111 E, elevation about 6,000 feet, V. C. Wynne-Edwards, July 25, 1944, No. 8,384; Sekwi River, Mile 174 E, Pump Station No. 5, elevation 3,625 feet, on dry, turfey limestone scree, No. 11,881; also collected on Nahanni Mountain, Wynne-Edwards, No. 8,521. In addition there is a specimen in the National Herbarium of Canada collected on the rocky summit of Mount Charles, Great Bear River, N.W.T., A. E. and R. T. Porsild, No. 3,347 (distributed as *A. compacta* Malte).

Antennaria densifolia appears to be a well-marked species of the *Alpinae* group. Superficially it resembles *A. pulvinata* Greene, which, however, is amply distinct by its much larger heads, pale bracts, and very hispid achenes. From

A. compacta Malte and *A. cana* (Fern. & Wieg.) Fern., it is at once distinguished by the densely congested, minute basal leaves.

It appears to be rather common on dry, turfey limestone scree of the upper east slope of the Mackenzie Mountains.

A. Ekmaniana A. E. Porsild, *Sargentia* 4:69 (1943). Plains of Abraham, Mile 82 E, No. 11,823. Rare, in a rocky scree, elevation 6,000 feet; Bolstead Creek, Mile 111 E, alpine, rocky slope, Wynne-Edwards, No. 8,385.

A. isolepis Greene. Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,384-A.

A. monocephala DC. Bolstead Creek, Mile 111 E, alpine slopes, 5,000-6,000 feet, Wynne-Edwards, Nos. 8,386-87. Noted as common in Macmillan Pass, Mile 225 E.

Achillea borealis Bong. Macmillan Pass, Mile 225 E, No. 11,279.

Chrysanthemum integrifolium Richards. Bolstead Creek, Mile 111 E, Wynne-Edwards, Nos. 8,398-99; Sekwi River, Mile 174 E, No. 11,866.

Artemisia arctica Less. Bolstead Creek, Mile 111 E, alpine slopes, 5,000 feet, Wynne-Edwards, Nos. 8,388-89. Noted as a dominant species in Macmillan Pass, Mile 225 E.

A. Tilesii Ledeb. Macmillan Pass, Mile 225 E, No. 11,277.

Petasites frigidus (L.) Fries. Bolstead Creek, Mile 11 E, alpine slopes, 4,500-5,000 feet, Wynne-Edwards, No. 8,397; Macmillan Pass, Mile 225 E, No. 11,270.

P. sagittatus (Banks) Gray. Noted as rare in Macmillan Pass, Mile 225 E, in wet places by a pond.

Arnica alpina (L.) Olin ssp. **angustifolia** (Vahl) Maguire in Madroño 6:153 (1942). Plains of Abraham, Mile 82 E, No. 11,824; Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,392.

A. Lessingii Greene. Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,390; Macmillan Pass, Mile 225 E, No. 11,268.

A. louisiana Farr ssp. **frigida** (Mey.) Maguire, Madroño 6:153 (1942). Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,391.

Senecio atropurpureus (Ledeb.) Fedtsch. in Fedtsch. & Fler. Fl. Eur. Russ. 992 (1910); *Cineraria atropurpurea* Ledeb. Mém. de l'Acad. St. Petersb. 5:574 (1814); *Cineraria frigida* Richards. Frankl. 1st Journ. ed. 1, App. 748 (1823); *Senecio frigidus* (Richards.) Less., *Linnaea* 4:239 (1831); not *S. atropurpureus* Porsild, *Rhod.* 41:298 (1939). See notes under *S. Lindstroemii*. Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,395; also noted as common in Macmillan Pass, Mile 225 E.

S. Kjellmanii A. E. Porsild, *Rhod.* 41:299 (1939). Bolstead Creek, Mile 111 E, alpine slopes, 5,000-6,000 feet, Wynne-Edwards, No. 8,394.

S. Lindstroemii (Ostf.) n. comb., *S. integrifolius* var. *Lindstroemii* Ostf., Kri. Vidensk. Selsk. Skr. 8:70, tab. 3, fig. 20 (1910); *Cineraria integrifolia* Kjellm., Vega Exp. Vetensk. Iakttag. 2:29 (1883), not *Senecio integrifolius* (L.) Clairv.; *S. atropurpureus* Porsild, *Rhodora* 41:298 (1939); *idem*, *Sargentia* 4:76 (1943) Scamman, *Rhodora*, 42:342 (1940), not *Cineraria atropurpurea* Ledeb. Mém. de l'Acad. St. Petersb. 5:574 (1814)..

Noted on Little Keele River near Mile 60 E.

Ostenfeld, l.c., suspected that his plant was distinct from *S. integrifolius*, but because his material was insufficient tentatively placed it as a variety of that species. With the abundant material now available it becomes clear that Ostenfeld's plant is quite distinct and that it is an endemic of Yukon and Alaska. Ostenfeld did not give a complete description of his plant and his illustration is that of a small, depauperate specimen.

Perennial herb with a short, stout rootstock; flowering stems stout, 15-25 cm. high, more or less floccose; basal leaves obovate, petioled, entire or faintly undulate-dentate, floccose-tomentose on the underside, glabrate in age, obtuse; stem leaves well developed, linear-lanceolate, 3-5; heads two to several in a sub-umbellate cluster, the lower often long-pedunculate; involueral bracts in one series, narrow, acuminate, dark purple, thinly tomentose; ray flowers bright

orange, sometimes with a purplish tinge, their ligules strap-like, 1.5 cm. long, 0.2 cm. wide, often reflexed; disc flowers yellow with reddish purple lobes; achenes sparingly strigose-hirsute.

Distribution: Arctic coast west of Mackenzie River, east slope of Richardson and Mackenzie Mountains, high mountains of Yukon and Alaska west to Seward Peninsula.

Hultén, Fl. Kamtch. 4:205 (1930), suggests that *S. tundricola* Tolm. "may be said to come between *S. frigidus* and *S. campestris*", and that it probably is identical with *S. integrifolius* var. *Lindstroemii* Ostf. He also places *S. kamtschaticus* Kom., in Fl. Penins. Kamtsch. 3:166 (1930), under *S. tundricola* ("pro maxime parte"). Komarov's plant, however, is described as having smooth achenes, which shows that it, at any rate, is not *S. integrifolius* var. *Lindstroemii* Ostf.

The writer, i.e., erroneously placed *S. Lindstroemii* under *S. atropurpureus* (Ledeb.) Fedtsch., based upon *Cineraria atropurpurea* Ledeb., which, however, as clearly shown by Ledebour's very complete and excellent description, is clearly *Cineraria* [*Senecio*] *frigida* of Richardson, which name it antedates by 9 years and for which *Senecio atropurpureus* (Ledeb.) B. Fedtseh. in Fedtsch. & Fler. Fl. Eur. Russ. 992 (1910) should be taken up.

S. lugens Richards. Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,393. Also noted as common in a muskeg on small tributary to Little Keele River, Mile 51 E, and in Macmillan Pass, Mile 225 E.

S. resedifolius Less. Plains of Abraham, Mile 82 E, No. 11,825; Sekwi River, Mile 174 E, No. 11,882; Bolstead Creek, Mile 111 E, high, rocky ridge, 5,000-6,000 feet, Wynne-Edwards, No. 8,396.

S. triangularis Hook. Noted as very common in Macmillan Pass, Mile 225 E. New to the flora of the Northwest Territories.

S. n.sp. Bolstead Creek, Mile 111 E, high, alpine ridge, 5,000-6,000 feet, Wynne-Edwards, No. 8,402.

This specimen, although very fragmentary, belongs to an undescribed species of which the writer obtained a very large series in southeastern Yukon. It will be described in a forthcoming paper on the Flora of Southeast Yukon Adjacent to the Canol Pipe-line.

Saussurea angustifolia DC. Sekwi River, Mile 174 E, No. 11,880.

S. angustifolia DC. var. **yukonensis** n. var.

Varietas a speciei caule valde abbreviato 3-8 cm. alto, calathis dense confertis et foliis excessis differt.

Distribution: High, unglaciated mountains of Yukon and Northwest Territories.

Bolstead Creek, Mile 111 E, high, alpine ridge, 6,000 feet, fruiting heads on July 25, Wynne-Edwards, No. 8,403 (Type). Additional specimens are from Dawson Range, Yukon, 62°N., 138°30' W., Hugh Bostock, No. 281; Mayo district, Yukon, 5,000 elevation; *idem*, No. 135.

Our plant may be related to *S. densa* (Hook.) Rydb. of the Canadian Rockies, which, however, has broad, green, repand-dentate leaves and glabrous involucrel bracts arranged in three sub-equal series. In *S. angustifolia* and in its var. *yukonensis* the first series is less than half as long as the second and third.

Crepis nana Richards. Bolstead Creek, Mile 111 E, Wynne-Edwards, No. 8,400.

Hieracium gracile Hook. Macmillan Pass, Mile 225 E, No. 11,267.

Taraxacum alaskanum Rydb. Bolstead Creek, Mile 111 E, alpine ridge, 6,000 feet, Wynne-Edwards, No. 8,401. Noted as rare in Macmillan Pass, Mile 225 E, on river bars.

LIST OF PLANTS COLLECTED BY V. C. WYNNE-EDWARDS ON
THE UPPER SLOPES OF LONE MOUNTAIN AND MOUNT
NAHANNI NEAR THE CONFLUENCE OF NORTH NAHANNI
RIVER AND THE MACKENZIE, JULY 7 AND 9, 1944

Woodsia glabella R. Br. Lone Mountain, No. 8,409.¹

Cystopteris fragilis (L.) Bernh. North peak of Nahanni Mountain, Nos. 8,410-11;
Lone Mountain, No. 8,412.

C. montana (Lam.) Bernh. North peak, Nahanni Mountain, No. 8,413.

Dryopteris austriaca (Jacq.) Woynar. Lone Mountain, young, immature plant, No. 8,414.

D. fragrans (L.) Schott, var. **remotiuscula** Kom. Fl. U.R.S.S., 1:38 (1934); *Thelypteris fragrans* var. *Hookeriana* Fern. Rhod. 25:3 (1923). For complete synonymy See Broun, Index N, Am. Ferns 68 (1938). Lone Mountain, No. 8,415.

Fernald, l.c., gives the known range of this well-marked variety as "temperate North American—west to Wisconsin and Minnesota,—and temperate eastern Asia". Earlier in the summer the writer collected it in southeastern Yukon. Besides, there are in the National Herbarium of Canada specimens collected on Yukon River between Whitehorse and the Alaska boundary, July 3, 1936, by E. and J. Lohbrunner, and also a collection from the east end of Lake Athabaska, Saskatchewan, by R. S. Campbell, No. 132,408 (Can.). Further collecting will probably show that the apparently disrupted range of the variety is continuous. It is new to the flora of the Northwest Territories.

D. Robertiana (Hoffm.) C. Chr. Lone Mountain, No. 8,416.

This station extends the known range of this species to the Northwest Territories, bridging a gap between Lake Athabaska and central Yukon. The species was also collected by Wynne-Edwards near Norman Wells.

Asplenium viride Huds. Lone Mountain, No. 8,417.

This station represents a very considerable extension of the known range of this plant, notorious for its disrupted and spotty distribution. It is new to the flora of the Northwest Territories.

Botrychium Lunaria (L.) Sw. Nahanni Mountain, spores 40 μ , No. 8,406.

B. Lunaria (L.) Sw. var. **minganense** (Vict.) Dole. Lone Mountain, mossy slope near summit; spores 30 μ , No. 8,407.

B. virginianum (L.) Sw. var. **europaeum** (Angstr.) Clausen. Near summit of Lone Mountain, in a damp hollow, No. 8,408.

The above number represents a very considerable extension of the known range of this plant, which had previously been recorded north to Hudson Hope, B.C., and from the Aleutian Islands and the southwest coast of Alaska. It is thus new to the flora of the Northwest Territories.

Equisetum scirpoides Michx. Summit of Lone Mountain, in a damp hollow, No. 8,418; north peak of Nahanni Mountain, No. 8,419.

Lycopodium annotinum L. Nahanni Mountain, No. 8,420.

The leaves of this plant are distinctly serrate, although it clearly belongs to the var. *pungens*.

L. complanatum L. var. **canadense** Vict. North peak of Nahanni Mountain, No. 8,421.

¹Numbers in this and following list are those of Wynne-Edwards.

Selaginella selaginoides (L.) Link. North peak of Nahanni Mountain, No. 8,422.

Juniperus communis L. var. **montana** Ait. North peak of Nahanni Mountain, No. 8,423.

J. horizontalis Moench. North peak of Nahanni Mountain, No. 8,424.

Calamagrostis purpurascens R. Br. Lone Mountain, No. 8,425.

Trisetum spicatum (L.) Richt. var. **molle** (Michx.) Piper. North peak of Nahanni Mountain, No. 8,426.

Elymus innovatus Beal. Lone Mountain, No. 8,427.

Carex scirpoidea Michx. North peak, Nahanni Mountain, No. 8,431; Lone Mountain, No. 8,432.

C. glacialis Mack. North peak, Nahanni Mountain, No. 8,433.

C. concinna R. Br. North peak, Lone Mountain, Nos. 8,429-30; dry dolomite summit of Nahanni Mountain, No. 8,428.

C. eburnea Boott. North face of Lone Mountain, No. 8,434; mossy slopes of summit, No. 8,430.

C. vaginata Tausch. North peak of Nahanni Mountain, 2,500 feet, No. 8,436.

C. capillaris L. North peak of Nahanni Mountain, No. 8,437.

C. petricosa Dew. Lone Mountain, No. 8,438; north peak of Nahanni Mountain, No. 8,439.

This rare species, long known only from mountains of Alberta, was recently recorded from the Mackenzie Delta, the arctic coast west of Mackenzie, and from Great Bear Lake (Porsild, Sargentia 4:19 (1943)).

Tofieldia coccinea Richards. Lone Mountain, No. 8,440.

T. glutinosa (Michx.) Pers. North peak, Nahanni Mountain, No. 8,625.

The specimens are indistinguishable from eastern material.

T. palustris Huds. Lone Mountain, No. 8,441.

Zygadenus elegans Pursh. Lone Mountain, No. 8,442.

Sisyrinchium angustifolium Miller. North peak, Nahanni Mountain, No. 8,443.

The specimens differ from typical eastern material by the very narrow leaves, the purplish tinged spathes, and glandular young capsules. It is a good match, however, for northwestern material in the National Herbarium of Canada, annotated as *S. angustifolium* by Bicknell.

Cypripedium guttatum Sw. Mossy spruce woods near summit of Lone Mountain, No. 8,445; north peak of Nahanni Mountain, No. 8,446.

C. parviflorum Salisb. North peak of Nahanni Mountain, No. 8,447.

C. passerinum Richards. Mossy woods near summit of Lone Mountain, No. 8,448; north peak of Nahanni Mountain, No. 8,449.

Orchis rotundifolia Banks. North peak of Nahanni Mountain, No. 8,450; damp hollow in summit of Lone Mountain, No. 8,451.

Habenaria hyperborea (L.) R. Br. North peak of Nahanni Mountain, No. 8,452.

H. obtusata (Pursh.) Richards. Damp hollow, summit of Lone Mountain, No. 8,453.

H. orbiculata (Pursh.) Torr. North peak of Nahanni Mountain, in spruce woods, No. 8,454.

A very notable extension of the known range of this species, in the west known previously from Alberta and British Columbia north to Peace River and from extreme southeastern Alaska.

H. viridis (L.) R. Br. var. **interjecta** Fern. North peak of Nahanni Mountain, No. 8,455.

New to the flora of the Northwest Territories. Its nearest known stations are in Alaska and on Lake Athabaska.

Goodyera repens (L.) R. Br. var. **ophioides** Fern. Lone Mountain, No. 8,456.

Calypso bulbosa (L.) Oakes. North peak of Nahanni Mountain, No. 8,444.

Salix alaxensis (Anders.) Cov. Lone Mountain, No. 8,457.

S. arbusculoides Anders. Lone Mountain, No. 8,458.

S. brachycarpa Nutt. Lone Mountain, No. 8,459.

New to the flora of the Northwest Territories. Its nearest known stations are in Yukon, Peace River, and Lake Athabaska, Sask.

S. glauca L. Lone Mountain, No. 8,460.

S. myrtilifolia Anders. Summit of Lone Mountain, No. 8,461.

S. reticulata L. North peak of Nahanni Mountain, No. 8,462; Lone Mountain, No. 8,463.

Betula glandulosa Michx. Lone Mountain, No. 8,465.

B. microphylla Bunge. North peak of Nahanni Mountain, elevation 2,700 feet, No. 8,464.

Polygonum viviparum L. Lone Mountain, No. 8,466.

Arenaria dawsonensis Britt. Near summit of Lone Mountain, No. 8,467.

A. verna L. var. **pubescens** (Cham. & Schlecht.) Fern. North peak of Nahanni Mountain, No. 8,468.

Silene acaulis L. North peak of Nahanni Mountain, No. 8,469; var. **exscapa** (All.) D.C., same place, No. 8,470.

Delphinium glaucum Wats. Crater-like hollow, summit of Lone Mountain, No. 8,471.

Anemone multifida Poir. var. **hudsonica** DC. Dry dolomite summit of Lone Mountain, No. 8,472.

A. parviflora Michx. Damp hollow, Lone Mountain, Nos. 8,473-74; north peak of Nahanni Mountain, No. 8,478.

Thalictrum alpinum L. North peak of Nahanni Mountain, No. 8,476.

Braya humilis (C. A. Mey.) Robins. Lone Mountain, No. 8,477; north peak of Nahanni Mountain, No. 8,478.

B. Richardsonii (Rydb.) Fern. North peak of Nahanni Mountain, No. 8,479.

Saxifraga aizoides L. Lone Mountain, No. 8,480.

S. oppositifolia L. Lone Mountain, No. 8,481.

S. tricuspidata Rottb. Lone Mountain, No. 8,482; north peak of Nahanni Mountain, No. 8,483.

Parnassia palustris L. var. **neogaea** Fern. Lone Mountain, No. 8,484.

Potentilla fruticosa L. North peak of Nahanni Mountain, No. 8,485.

P. uniflora Ledeb. Lone Mountain, No. 8,486.

Dryas Drummondii Richards. Lone Mountain, No. 8,487.

D. integrifolia M. Vahl. Lone Mountain Nos. 8,488-89.

Oxytropis hyperborea A. E. Porsild, Sargentia 4:53 (1943). North peak of Nahanni Mountain, No. 8,490.

- O. hudsonica** (Greene) Fern. Lone Mountain, No. 8,491.
- Hedysarum alpinum** L. var. **americanum** Michx. North peak of Nahanni Mountain, No. 8,492.
- Viola renifolia** Gray var. **Brainerdii** (Greene) Fern. Lone Mountain, No. 8,493.
- Pyrola asarifolia** Michx. var. **incarnata** (DC.) Fern. North peak of Nahanni Mountain, No. 8,494.
- P. grandiflora** Rad. Summit of Lone Mountain, No. 8,495.
- P. secunda** L. North peak of Nahanni Mountain, No. 8,496.
- Rhododendron lapponicum** (L.) Wahlenb. Lone Mountain, No. 8,497.
- Cassiope tetragona** (L.) D. Don. North peak of Nahanni Mountain, No. 8,498; Lone Mountain, No. 8,499.
- Andromeda Polifolia** L. North peak of Nahanni Mountain, No. 8,500.
- Vaccinium uliginosum** L. Lone Mountain, No. 8,502.
- V. uliginosum** L. var. **alpinum** Big. North peak of Nahanni Mountain, No. 8,501.
- Androsace Chamaejasme** Host. var. **arctica** Knuth. North peak of Nahanni Mountain, No. 8,503; Lone Mountain, No. 8,504.
- Gentiana propinqua** Richards. Lone Mountain, No. 8,505.
- Castilleja pallida** (L.) Spreng. ssp. **caudata** Pennell. North peak of Nahanni Mountain, No. 8,506.
- Pedicularis lanata** Cham. & Schlecht. Lone Mountain, No. 8,507; north peak of Nahanni Mountain, No. 8,508.
- Pinguicula vulgaris** L. Lone Mountain, No. 8,509.
- Galium boreale** L. North peak of Nahanni Mountain, No. 8,510.
- Campanula aurita** Greene. Lone Mountain, Nos. 8,511-12.
- C. rotundifolia** L. North peak of Nahanni Mountain, No. 8,513.
- Solidago multiradiata** Ait. var. **scopulorum** Gray. Lone Mountain, No. 8,514.
- Aster alpinus** L. ssp. **Vierhapperi** Onne. North peak of Nahanni Mountain, No. 8,516; dry summit of Lone Mountain, No. 8,517.
- A. sibiricus** L. North peak of Nahanni Mountain, No. 8,515.
- Erigeron hyssopifolius** Michx. North peak of Nahanni Mountain, No. 8,518.
- Antennaria isolepis** Greene. Dry dolomite summit of Lone Mountain, No. 8,519.
- A. pulcherrima** (Hook.) Greene. Lone Mountain, No. 8,520.
- A. densifolia** n.sp. North peak of Nahanni Mountain, No. 8,521. (See page 26.)
- Petasites palmatus** (Ait.) Gray. Summit of Lone Mountain, No. 8,522.
- Arnica alpina** (L.) Olin ssp. **attenuata** (Greene) Maguire. North peak of Nahanni Mountain, No. 8,523.
- A. lonchophylla** Greene ssp. **genuina** Maguire. Brittonia 4,3:430 (1943). North peak of Nahanni Mountain, No. 8,524; Lone Mountain, No. 8,525.
- A. louisiana** Farr ssp. **frigida** (Mey.) Maguire. Dry limestone summit of Lone Mountain, No. 8,526.
- Senecio cymbalarioides** Nutt. North peak of Nahanni Mountain, No. 8,527.
- S. hyperborealis** Greenm. Dry summit of Lone Mountain, Nos. 8,528-29.
- S. lugens** Richards. Damp hollow in summit of Lone Mountain, No. 8,530; north peak of Nahanni Mountain, No. 8,531.
- S. pauperculus** Michx. North peak of Nahanni Mountain, No. 8,532.

MISCELLANEOUS COLLECTIONS OF VASCULAR PLANTS MADE BY
V. C. WYNNE-EDWARDS ALONG MACKENZIE RIVER BELOW
GREAT SLAVE LAKE

SOUTH SHORE OF RIVER, 10 MILES BELOW MILLS LAKE, 61°20' N.—118°25' W.,
JUNE 28, 1944

- Triglochin maritimum* L. No. 8,545.
Beckmannia Syzigachne (Steud.) Fern. No. 8,543.
Hordeum jubatum L. No. 8,544.
Sisyrinchium angustifolium Miller. No. 8,546.
Sagina nodosa (L.) Fenzl. No. 8,547.
Anemone canadensis L. No. 8,548. According to Raup, Journ. Arnold Arb. 17:253 (1936), not known from north of Wood Buffalo Park.
Ranunculus Macounii Britt. No. 8,549.
R. reptans L. No. 8,550.
Thalictrum venulosum Trel. No. 8,551.
Parnassia montanensis Fern. & Rydb. No. 8,552.
Vicia americana Muhl. No. 8,553.
Astragalus alpinus L. No. 8,555.
Primula mistassinica Michx. var. *typica* Fern. No. 8,556.
Stachys palustris L. No. 8,554.
Castilleja Raupii Pennell ssp. *ursina* Pennell. No. 8,557.
Veronica peregrina L. ssp. *xalapensis* (H.B.K.) Pennell. No. 8,558.
Erigeron philadelphicus L. No. 8,559.
Antennaria nitida Greene. No. 8,560.
A. rosea (Eat.) Greene. No. 8,561.

SIMPSON, JULY 2, 1944

- Braya* sp. No. 8,601.
Bosniakia rossica (Cham. & Schlecht.) B. Fedtsch. No. 8,610.
Plantago septata Morris. No. 8,609.

OUTWASH GRAVEL PLAIN NEAR MOUTH OF NORTH NAHANNI RIVER,
JULY 6, 1944

- Calamagrostis inexpansa* Gray. No. 8,535.
Lesquerella arctica R. Br. No. 8,536.
Dryas Drummondii Richards. No. 8,537.
Astragalus striatus Nutt.; *A. adsurgens* of authors, not Pall. No. 8,538.
 New to the flora of the Northwest Territories.
Pedicularis labradorica Wirs. No. 8,539.
Aster sibiricus L. No. 8,540.
Crepis elegans Hook. No. 8,542.
Taraxacum lacerum Greene. No. 8,541.

WRIGLEY, JULY 13, 1944

Rosa blanda Ait. No. 8,602.

Entirely unarmed; flowers pink, large 5-6 cm. in diameter, single or two together; sepals reflexed, soft ciliate along the edges; the immature fruits globose, glabrous; leaflets large, cuneate at the base, coarsely serrate, sparingly downy pubescent on both sides, not glandular-dotted beneath, leaf rachis downy, red; stipules large, not glandular.

Vicia americana Muhl. No. 8,603.**Astragalus alpinus** L. Nos. 8,604-5.**Linum Lewisii** Pursh. No. 8,608.**Rhinanthus groenlandicus** Chab. No. 8,606.

SALINE RIVER, ABOVE NORMAN, 64°17' N.—124°30' W., JULY 15, 1944

Calamagrostis inexpansa Gray. No. 8,568.**Agropyron trachycaulum** (Link) Malte. No. 8,569.**Bromus Pumpellianus** Scribn. No. 8,567.**Hordeum jubatum** L. No. 8,570.**Zygodenus elegans** Pursh. No. 8,571.**Astragalus alpinus** L. No. 8,572.**Vicia americana** Muhl. No. 8,624.**Oxytropis splendens** Dougl. No. 8,573.**Elaeagnus commutata** Bernh. No. 8,574.**Epilobium latifolium** L. No. 8,575.**Castilleja Raupii** Pennell ssp. *ursina* Pennell. No. 8,576.**Galium boreale** L. No. 8,577.**Solidago decumbens** Greene. No. 8,578.**S. lepida** DC. var. *elongata* (Nutt.) Fern. No. 8,579.**Aster** sp. No. 8,580.

According to Rydberg's Fl. Prairies and Plains, the specimens belong in the sect. *Multiflori*.

A. ?ptarmicoides T. & G. No. 8,581.

Stems about 25 cm. high; stem leaves oblanceolate, 10 cm. long, 1.0 cm. wide, acuminate, not prominently nerved, glabrous or with a few soft hairs; with a clasping base; heads large and showy, 3 cm. diameter, singly from the upper leaf axils, involueral bracts white with long green tips, glabrous or sparingly hispid along the margins; ligules strap-like, pink; immature achenes hispid. The specimens that cannot be referred to the polymorphous *A. junceus* Ait., are tentatively placed here, notwithstanding the hispid achenes. New to the flora of the Northwest Territories.

Erigeron acris L. var. *asteroides* (Andrz.) DC. No. 8,582.**Achillea borealis** Bong. No. 8,583.**Artemisia canadensis** Michx. No. 8,584.**Senecio pauperculus** Michx. No. 8,585.**Hieracium canadense** Michx. No. 8,586.

FIVE MILES ABOVE OLD FORT NORMAN, 64°38' N.—126°45' W., JULY 15, 1944

Parnassia palustris L. var. **neogaea** Fern. No. 8,562.

Primula stricta Hornem. No. 8,563.

Gentiana Raupii Porsild, Sargentia 4:60 (1943). No. 8,564.

Rhinanthus groenlandicus Chab. No. 8,565.

Achillea sibirica Ledeb. No. 8,566.

BOSWORTH LAKE, 4 MILES EAST OF NORMAN WELLS, APPROXIMATELY
65°20' N.—126°45' W., JULY 29, 1944

Dryopteris Robertiana (Hoffm.) C. Chr. No. 8,587.

Tofieldia coccinea Richards. No. 8,588.

Goodyera repens (L.) R. Br. var. **ophioides** Fern. No. 8,589.

Anemone multifida Poir. var. **hudsonica** DC. No. 8,590.

Potentilla nivea L. No. 8,591.

Dryas integrifolia M. Vahl. No. 8,592.

Androsace septentrionalis L. No. 8,595.

Aster alpinus L. ssp. **Vierhapperi** Onne. No. 8,596.

Erigeron compositus Pursh. No. 8,597.

SEVEN MILES BELOW GOOD HOPE, AUGUST 8, 1944

Juncus castaneus Sm. No. 8,612.

Primula stricta Hornem. No. 8,615.

Castilleja Raupii ssp. **ursina** Pennell. No. 8,614.

Aster sibiricus L. No. 8,611.

Aster sp. No. 8,616 (same as No. 8,580).

Achillea borealis Bong. No. 8,613.

ARCTIC RED RIVER, AUGUST 12, 1944

Carex aquatilis Wahlenb. No. 8,621.

C. paupercula Michx. No. 8,622.

C. diandra Schrank. No. 8,623.

Ranunculus lapponicus L. No. 8,619.

Lupinus arcticus Wats. No. 8,620.

Saussurea angustifolia DC. No. 8,618.

